

# SEQUENCE LISTING

JCS41 U.S. PTO  
10/037270



<110> Tang, Y. Tom  
Liu, Chenghua  
Asundi, Vinod  
Zhang, Jie  
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Zhao, Qing A.  
Wehrman, Tom  
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Wang, Jian-Rui  
Zhou, Ping  
Ma, Yunqing  
Wang, Dunrui  
Wang, Zhiwei  
Tillinghast, John  
Drmanac, Radoje T.

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Ser Ser Ser Ser Lys Thr Ser Ser Val Arg Asn Lys Lys Gly Arg Pro	
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Pro Leu His Lys Lys Arg Val Glu Asp Glu Ser Leu Asp Asn Thr Trp	
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cta aac agg act gac acc atg att cag act cct ggc ccc ctg cca gca	3842
Leu Asn Arg Thr Asp Thr Met Ile Gln Thr Pro Gly Pro Leu Pro Ala	
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Pro Gln Leu Thr Ser Thr Val Leu Arg Glu Asn Ser Arg Pro Met Gly	
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Asp Gln Ile Gln Glu Pro Glu Ser Glu His Gly Ser Glu Pro Asp Phe	
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Leu His Asn Pro Gln Met Gln Ile Ser Trp Leu Gly Gln Pro Lys Leu	
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Met Glu Leu Ser Ala Val Gly Glu Arg Val Phe Ala Ala Glu Ser	
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Ile Ile Lys Arg Arg Ile Arg Lys Gly Arg Ile Glu Tyr Leu Val Lys	
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Trp Lys Gly Trp Ala Ile Lys Tyr Ser Thr Trp Glu Pro Glu Glu Asn	
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Ile Leu Asp Ser Arg Leu Ile Ala Ala Phe Glu Gln Lys Glu Arg Glu	
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His Phe Ser Val Lys Pro Ser Ala Ser Ala Ser Ser Pro Lys Leu His	
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Ser Ser Ala Ala Val His Arg Leu Lys Lys Asp Ile Arg Arg Cys His	
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Ile Asn Arg Lys Val Lys Pro Arg Glu Pro Lys Arg Asn Arg Ile Ile	
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Gln Gly Ala Gly Ala Leu Ala Arg Pro Lys Val Pro Ser Arg Asn Arg	
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Val Ile Gly Lys Ser Lys Lys Phe Ser Glu Ser Val Leu Arg Thr Gln	
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Ile Arg His Met Lys Phe Gly Ala Phe Ala Leu Tyr Lys Pro Pro Pro	
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gcc ccc ctg gta gcc ccg tcc ccc ggc aag gct gag gcc tca gcc ccg	829
Ala Pro Leu Val Ala Pro Ser Pro Gly Lys Ala Glu Ala Ser Ala Pro	
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Gly Pro Gly Leu Leu Leu Ala Ala Pro Ala Ala Pro Tyr Asp Ala Arg	
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Ala Pro Ser Trp Arg Glu Pro Glu Val Leu Asp Leu Ser Leu Pro Pro	
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Glu Ser Ala Ala Thr Ser Lys Arg Ala Pro Pro Glu Val Thr Ala Ala	
320 325 330 335	
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Cys Gly Ala Glu Gly Gly Gly Pro Gly Ser Gly Pro Phe Ala Asp Leu  
28 33 38 43  
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Ala Pro Gly Ala Val His Met Arg Val Lys Glu Gly Ser Lys Ile Arg  
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Cys Ala Glu Ile Leu Lys Arg Arg Leu Ala Gly Leu His Gln Val Thr  
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Pro Ala Val Leu Gly Phe Glu Gly Ser Ala Asn Lys Ile Gly Val Gly	
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Val Val Arg Asp Gly Lys Val Leu Ala Asn Pro Arg Arg Thr Tyr Val	
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Thr Pro Pro Gly Thr Gly Phe Leu Pro Gly Asp Thr Ala Arg His His	
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Arg Ala Val Ile Leu Asp Leu Leu Gln Glu Ala Leu Thr Glu Ser Gly	
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Leu Thr Ser Gln Asp Ile Asp Cys Ile Ala Tyr Thr Lys Gly Pro Gly	
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Met Gly Ala Pro Leu Val Ser Val Ala Val Val Ala Arg Thr Val Ala	
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Ile	Glu	Met	Gly	Arg	Leu	Ile	Thr	Gly	Ala	Thr	Ser	Pro	Thr	Val	Leu	
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Tyr	Val	Ser	Gly	Gly	Asn	Thr	Gln	Val	Ile	Ala	Tyr	Ser	Glu	His	Arg	
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Tyr	Asn	Ile	Glu	Gln	Met	Ala	Lys	Arg	Gly	Lys	Lys	Leu	Val	Glu	Leu	
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Pro	Tyr	Thr	Val	Lys	Gly	Met	Asp	Val	Ser	Phe	Ser	Gly	Ile	Leu	Ser	
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Phe	Ile	Glu	Asp	Val	Ala	His	Arg	Met	Leu	Ala	Thr	Gly	Glu	Cys	Thr	
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Pro	Glu	Asp	Leu	Cys	Phe	Ser	Leu	Gln	Glu	Thr	Val	Phe	Ala	Met	Leu	
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322

327

332

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&lt;211&gt; 1920

&lt;212&gt; DNA

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&lt;222&gt; (120) .. (1394)

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 Glu Ser Ala Gly Glu Gly Leu Gly Pro Arg Arg Val Lys Pro Ser Pro  
 97 102 107 112  
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 Arg Arg Glu Thr Phe Val Leu Lys Asp Ser Pro Val Arg Asp Leu Leu  
 113 118 123 128



ccc act gtg aac tct ttg acg cgg agc acc ccc tcc cca agc agc ctg	551
Pro Thr Val Asn Ser Leu Thr Arg Ser Thr Pro Ser Pro Ser Ser Leu	
129 134 139 144	
acg cct cga ctc cgg agt aat gat agg aag ggg tca gtc agg gct ctc	599
Thr Pro Arg Leu Arg Ser Asn Asp Arg Lys Gly Ser Val Arg Ala Leu	
145 150 155 160	
cgg gct aca tct gga aag agg ccc tcc aac atg aag agg gag tca ccc	647
Arg Ala Thr Ser Gly Lys Arg Pro Ser Asn Met Lys Arg Glu Ser Pro	
161 166 171 176	
act tgc aat ctg ttc cct gca tcc aaa agc cca gca tct tct cct ctt	695
Thr Cys Asn Leu Phe Pro Ala Ser Lys Ser Pro Ala Ser Ser Pro Leu	
177 182 187 192	
acc cga tgc act ccc cca gtc cgg ggg aga gcc ggg ccc agt ggg aga	743
Thr Arg Ser Thr Pro Pro Val Arg Gly Arg Ala Gly Pro Ser Gly Arg	
193 198 203 208	
gca gca gcc agt gag gag acc aga gca gcc aag ttg cgg gga gca gct	791
Ala Ala Ala Ser Glu Glu Thr Arg Ala Ala Lys Leu Arg Gly Ala Ala	
209 214 219 224	
gct aaa tct tcc agt caa ctg ccc att ccc tgc gcc atc ccc agg cct	839
Ala Lys Ser Ser Ser Gln Leu Pro Ile Pro Ser Ala Ile Pro Arg Pro	
225 230 235 240	
gcc agc cga atg cca ctc acc agc cgg agt gtg cca cct ggc aga ggt	887
Ala Ser Arg Met Pro Leu Thr Ser Arg Ser Val Pro Pro Gly Arg Gly	
241 246 251 256	
gcc cta cct ccg gat tct ctg tca act cga aaa ggg ctt cca aga cca	935
Ala Leu Pro Pro Asp Ser Leu Ser Thr Arg Lys Gly Leu Pro Arg Pro	
257 262 267 272	
agc act gca gga cac aga gtg cgg gaa agt gga cac aag gtt cct gtt	983
Ser Thr Ala Gly His Arg Val Arg Glu Ser Gly His Lys Val Pro Val	
273 278 283 288	
tcc cag cga cta aat ctt cct gtc atg ggt gcc act cgc agc aat ctg	1031
Ser Gln Arg Leu Asn Leu Pro Val Met Gly Ala Thr Arg Ser Asn Leu	
289 294 299 304	
cag ccc ccc agg aaa gtg gca gtc cca gga cct acc agg tca gtc tgg	1079
Gln Pro Pro Arg Lys Val Ala Val Pro Gly Pro Thr Arg Ser Val Trp	
305 310 315 320	
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Ser Ser Leu Ala His Pro Val Ser Leu Pro Arg His His Leu Gly Phe	
321 326 331 336	
caa gct gtt atg cac atc agc cct gaa ttt tgt atg gaa aga tgg aga	1175
Gln Ala Val Met His Ile Ser Pro Glu Phe Cys Met Glu Arg Trp Arg	
337 342 347 352	

gag gag ggg agc ctg ggg cag ggg aag ggg gat ccc att tct tcc cac	1223
Glu Glu Gly Ser Leu Gly Gln Gly Lys Gly Asp Pro Ile Ser Ser His	
353 358 363 368	
cct gag gag ctt gaa ttc tgc tgg gtg aca aat ggg ctt gag gaa gaa	1271
Pro Glu Glu Leu Glu Phe Cys Trp Val Thr Asn Gly Leu Glu Glu Glu	
369 374 379 384	
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Gly His Phe Lys Ala Val Ile Pro Ser Ile Ser Leu Gly Lys Glu Ile	
385 390 395 400	
agg aca gca agc aag act tca gta gca aac act aca gtc agg tac ctg	1367
Arg Thr Ala Ser Lys Thr Ser Val Ala Asn Thr Thr Val Arg Tyr Leu	
401 406 411 416	
gac tgc cct cta ccc agc aga ccc tga ctcca gcagattctg gcccagggac	1419
Asp Ser Pro Leu Pro Ser Arg Pro *	
417 422	
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cattggttca ctggacattt ccacgtgagc ggcctccgta gctaacctcc ctgccctctg	1719
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gcatcggagc ggaaaccaga ggggaaacct tgaactcctc cagacaattg cttccggggga	180

gttgcgaggg agcgaggggg aataaaggac ccgcgaggaa gggcccgcg atggcgcgtc	240
cctgaggggtc gtggcgagtt cgcgagagcgt gggaaggagc ggaccctgct ctccccgggc	300
tgcggggcc atg gcc acg gcg gag cgg aga gcc ctc ggc atc ggc ttc cag	350
Met Ala Thr Ala Glu Arg Arg Ala Leu Gly Ile Gly Phe Gln	
1 5 10	
tgg ctc tct ttg gcc act ctg gtg ctc atc tgc gcc ggg caa ggg gga	398
Trp Leu Ser Leu Ala Thr Leu Val Leu Ile Cys Ala Gly Gln Gly Gly	
15 20 25 30	
cgc agg gag gat ggg ggt cca gcc tgc tac ggc gga ttt gac ctg tac	446
Arg Arg Glu Asp Gly Gly Pro Ala Cys Tyr Gly Gly Phe Asp Leu Tyr	
31 36 41 46	
ttc att ttg gac aaa tca gga agt gtg ctg cac cac tgg aat gaa atc	494
Phe Ile Leu Asp Lys Ser Gly Ser Val Leu His His Trp Asn Glu Ile	
47 52 57 62	
tat tac ttt gtg gaa cag ttg gct cac aaa ttc atc agc cca cag ttg	542
Tyr Tyr Phe Val Glu Gln Leu Ala His Lys Phe Ile Ser Pro Gln Leu	
63 68 73 78	
aga atg tcc ttt att gtt ttc tcc acc cga gga aca acc tta atg aaa	590
Arg Met Ser Phe Ile Val Phe Ser Thr Arg Gly Thr Thr Leu Met Lys	
79 84 89 94	
ctg aca gaa gac aga gaa caa atc cgt caa ggc cta gaa gaa ctc cag	638
Leu Thr Glu Asp Arg Glu Gln Ile Arg Gln Gly Leu Glu Glu Leu Gln	
95 100 105 110	
aaa gtt ctg cca gga gga gac act tac atg cat gaa gga ttt gaa agg	686
Lys Val Leu Pro Gly Gly Asp Thr Tyr Met His Glu Gly Phe Glu Arg	
111 116 121 126	
gcc agt gag cag att tat tat gaa aac aga caa ggg tac agg aca gcc	734
Ala Ser Glu Gln Ile Tyr Tyr Glu Asn Arg Gln Gly Tyr Arg Thr Ala	
127 132 137 142	
agc gtc atc att gct ttg act gat gga gaa ctc cat gaa gat ctc ttt	782
Ser Val Ile Ile Ala Leu Thr Asp Gly Glu Leu His Glu Asp Leu Phe	
143 148 153 158	
ttc tat tca gag agg gag gct aat agg tct cga gat ctt ggt gca att	830
Phe Tyr Ser Glu Arg Glu Ala Asn Arg Ser Arg Asp Leu Gly Ala Ile	
159 164 169 174	
gtt tac tgt gtt ggt gtg aaa gat ttc aat gag aca cag ctg gcc cgg	878
Val Tyr Cys Val Gly Val Lys Asp Phe Asn Glu Thr Gln Leu Ala Arg	
175 180 185 190	
att gcg gac agt aag gat cat gtg ttt ccc gtg aat gac ggc ttt cag	926
Ile Ala Asp Ser Lys Asp His Val Phe Pro Val Asn Asp Gly Phe Gln	
191 196 201 206	
gct ctg caa ggc atc atc cac tca att ttg aag aag tcc tgc atc gaa	974

Ala	Leu	Gln	Gly	Ile	Ile	His	Ser	Ile	Leu	Lys	Lys	Ser	Cys	Ile	Glu	
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Ile	Leu	Ala	Ala	Glu	Pro	Ser	Thr	Ile	Cys	Ala	Gly	Glu	Ser	Phe	Gln	
223					228					233					238	
gtt gtc gtg aga gga aac ggc ttc cga cat gcc cgc aac gtg gac agg																1070
Val	Val	Val	Arg	Gly	Asn	Gly	Phe	Arg	His	Ala	Arg	Asn	Val	Asp	Arg	
239					244					249					254	
gtc ctc tgc agc ttc aag atc aat gac tcg gtc aca ctc agt aag tcc																1118
Val	Leu	Cys	Ser	Phe	Lys	Ile	Asn	Asp	Ser	Val	Thr	Leu	Ser	Lys	Ser	
255					260					265					270	
ttg cag agt cca tgg gtt tct tcg aca agt ggc ttc aag gaa ggg aat																1166
Leu	Gln	Ser	Pro	Trp	Val	Ser	Ser	Thr	Ser	Gly	Phe	Lys	Glu	Gly	Asn	
271					276					281					286	
tcc cac cct tgt ctt cca gca agg cca cac aca tga aacc agcagaaaag																1216
Ser	His	Pro	Cys	Leu	Pro	Ala	Arg	Pro	His	Thr	*					
287					292					297						
agtccttattt gctggaaaga cccccagcaa gggcatagtg agcccttaca gtggttccag																1276
tcagaaaagg caccacttgg gtgggcacag ccccatgggt gtccaacttg gtaagcagag																1336
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gcttccgagg ccaccggaac ggaggaggct tcggtggctc tttgtctacc tgctctgggt 240  
gttaaagagc ccgctcgcag cctgcatcgc cggggctcgg gacagaagtc agcggcgggg 300  
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cacagactca tagaagcgct cactggcaga aagtgggctg agctgggtta gtgaatcaga 540  
ggagaaagcc cctaaaaaac tggagtacga cagtggtagc ctgaag atg gaa cct 595  
Met Glu Pro  
1  
ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat tca 643  
Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp Ser  
4 9 14 19  
tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct ggt 691  
Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro Gly  
20 25 30 35  
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Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro Ile  
36 41 46 51  
act cac aca gcc cag agt gcc ctc aaa gtc gca ggc aaa cct gag ggc 787  
Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu Gly  
52 57 62 67  
aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc caa 835  
Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu Gln  
68 73 78 83  
cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag aag 883  
Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys Lys  
84 89 94 99  
ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc tac 931  
Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly Tyr  
100 105 110 115  
aag aag cct cct cct gcc aca ggc aca gcc act gtc atg caa act ggt 979  
Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr Gly  
116 121 126 131  
ggt tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct gtc 1027  
Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro Val  
132 137 142 147  
aag cca gta aat ggg cgc aag act agc tta gat gtt tcc aac agt gca 1075



372		377		382		387	
ggc ctg cac agg agc atg gag tcc ctc cag atg cca atg agc ctc ccc							1795
Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu Pro							
388		393		398		403	
agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc cct							1843
Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro Pro							
404		409		414		419	
gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga agc							1891
Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly Ser							
420		425		430		435	
ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act ctt							1939
Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr Leu							
436		441		446		451	
ccc aag aaa ggg ctc agg tac cag ctt cag tcc cag gag gag acc aag							1987
Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser Gln Glu Glu Thr Lys							
452		457		462		467	
gag agg cga cat tcc cat acc att ggt ggg ctg cct gaa tcc gat gac							2035
Glu Arg Arg His Ser His Thr Ile Gly Gly Leu Pro Glu Ser Asp Asp							
468		473		478		483	
cag tca gag ctg cct tct ccc cct gca ctt ccc atg tct ctg agt gca							2083
Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro Met Ser Leu Ser Ala							
484		489		494		499	
aag ggc caa ctt acc aac ata gtg agt ccc act gcg gcc acc acg cca							2131
Lys Gly Gln Leu Thr Asn Ile Val Ser Pro Thr Ala Ala Thr Thr Pro							
500		505		510		515	
aga atc acc cgc tcc aac agc atc ccc acc cac gag gcg gcc ttc gag							2179
Arg Ile Thr Arg Ser Asn Ser Ile Pro Thr His Glu Ala Ala Phe Glu							
516		521		526		531	
ctg tac agc ggc tcc caa atg ggg agc acc ctg tcc ctg gcc gag aga							2227
Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu Ser Leu Ala Glu Arg							
532		537		542		547	
ccc aag gga atg att cgg tca gga tcc ttc cga gac ccc acg gac gat							2275
Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg Asp Pro Thr Asp Asp							
548		553		558		563	
gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc tac							2323
Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr Tyr							
564		569		574		579	
tcc tca caa atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag gaa							2371
Ser Ser Gln Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln Glu							
580		585		590		595	
aaa gtg gcc acc ttg acg tct cag ctt tct gcc aat gct aat ctg gtg							2419
Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu Val							
596		601		606		611	

gct gct ttt gag cag agc ctg gtg aat atg aca tcc cgc ctg cga cac	2467
Ala Ala Phe Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg His	
612 617 622 627	
ctg gca gag acg gcc gag gag aag gac act gag ctg ctg gat ttg cga	2515
Leu Ala Glu Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu Arg	
628 633 638 643	
gaa acc ata gac ttt ctg aag aaa aag aac tct gag gcc cag gca gtc	2563
Glu Thr Ile Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala Val	
644 649 654 659	
att cag gga gcc ctt aat gcc tca gaa acc aca ccc <sup>h</sup> aaa ggt agg aca	2611
Ile Gln Gly Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Gly Arg Thr	
660 665 670 675	
tcc agc cac aga ttg aga ggg aac agg gag cag gaa agt aag agt att	2659
Ser Ser His Arg Leu Arg Gly Asn Arg Glu Gln Glu Ser Lys Ser Ile	
676 681 686 691	
aca gat ttt tat ctg ggc cca tag tattccaagt cctatatcaa gtctctagaa	2713
Thr Asp Phe Tyr Leu Gly Pro *	
692 697	
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ggagaaagcc cctaaaaaac tggagtacga cagtggtagc ctgaag atg gaa cct 595  
Met Glu Pro  
1  
ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat tca 643  
Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp Ser  
4 9 14 19  
tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct ggt 691  
Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro Gly  
20 25 30 35  
tcc ctg aag aag ggc aag acc cca cct gtg gct gta act tcc ccc atc 739  
Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro Ile  
36 41 46 51  
act cac aca gcc cag agt gcc ctc aaa gtc gca ggc aaa cct gag ggc 787  
Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu Gly  
52 57 62 67  
aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc caa 835  
Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu Gln  
68 73 78 83  
cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag aag 883  
Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys Lys  
84 89 94 99  
ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc tac 931  
Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly Tyr  
100 105 110 115  
aag aag cct cct cct gcc aca ggc aca gcc act gtc atg caa act ggt 979  
Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr Gly  
116 121 126 131  
ggt tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct gtc 1027  
Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro Val  
132 137 142 147  
aag cca gta aat ggg cgc aag act agc tta gat gtt tcc aac agt gca 1075

Lys	Pro	Val	Asn	Gly	Arg	Lys	Thr	Ser	Leu	Asp	Val	Ser	Asn	Ser	Ala	
148					153					158					163	
gag	cca	gga	ttc	ctg	gct	cct	gga	gcc	cgt	tct	aac	atc	cag	tac	cgc	1123
Glu	Pro	Gly	Phe	Leu	Ala	Pro	Gly	Ala	Arg	Ser	Asn	Ile	Gln	Tyr	Arg	
164					169					174					179	
agc	ctg	ccc	cgg	cca	gcc	aag	tca	agt	tct	atg	agc	gtg	acc	ggc	ggg	1171
Ser	Leu	Pro	Arg	Pro	Ala	Lys	Ser	Ser	Ser	Met	Ser	Val	Thr	Gly	Gly	
180					185					190					195	
cgg	ggt	gga	cct	cgc	cct	gtg	agc	agc	agc	att	gac	ccc	agt	ctc	ctc	1219
Arg	Gly	Gly	Pro	Arg	Pro	Val	Ser	Ser	Ser	Ile	Asp	Pro	Ser	Leu	Leu	
196					201					206					211	
agc	acc	aag	cag	gga	ggc	ctt	acg	cct	tcc	aga	ctg	aag	gag	cct	acc	1267
Ser	Thr	Lys	Gln	Gly	Gly	Leu	Thr	Pro	Ser	Arg	Leu	Lys	Glu	Pro	Thr	
212					217					222					227	
aag	gta	gcc	agt	ggg	cgg	acc	act	cca	gcc	cct	gtc	aat	cag	aca	gat	1315
Lys	Val	Ala	Ser	Gly	Arg	Thr	Thr	Pro	Ala	Pro	Val	Asn	Gln	Thr	Asp	
228					233					238					243	
cgg	gaa	aag	gag	aag	gcc	aaa	gcc	aag	gca	gtg	gcc	ttg	gac	tca	gac	1363
Arg	Glu	Lys	Glu	Lys	Ala	Lys	Ala	Lys	Ala	Val	Ala	Leu	Asp	Ser	Asp	
244					249					254					259	
aac	atc	tcc	ttg	aag	agt	att	ggc	tcc	cca	gaa	agt	act	ccc	aag	aac	1411
Asn	Ile	Ser	Leu	Lys	Ser	Ile	Gly	Ser	Pro	Glu	Ser	Thr	Pro	Lys	Asn	
260					265					270					275	
caa	gca	agc	cac	ccc	aca	gcc	acc	aag	ctg	gca	gag	ctg	cca	cca	acc	1459
Gln	Ala	Ser	His	Pro	Thr	Ala	Thr	Lys	Leu	Ala	Glu	Leu	Pro	Pro	Thr	
276					281					286					291	
cct	ctc	agg	gcc	aca	gcg	aag	agc	ttt	gtc	aaa	cca	ccc	tca	cta	gcc	1507
Pro	Leu	Arg	Ala	Thr	Ala	Lys	Ser	Phe	Val	Lys	Pro	Pro	Ser	Leu	Ala	
292					297					302					307	
aat	ctt	gac	aag	gtc	aac	tcc	aac	agt	ctg	gat	cta	cca	tca	tcc	agt	1555
Asn	Leu	Asp	Lys	Val	Asn	Ser	Asn	Ser	Leu	Asp	Leu	Pro	Ser	Ser	Ser	
308					313					318					323	
gat	acc	acc	cat	gct	tca	aag	gtc	cca	gat	ctg	cat	gct	aca	agc	tca	1603
Asp	Thr	Thr	His	Ala	Ser	Lys	Val	Pro	Asp	Leu	His	Ala	Thr	Ser	Ser	
324					329					334					339	
gca	tct	ggg	ggc	cct	ctc	cct	tcc	tgc	ttc	acc	ccc	agt	ccg	gca	ccc	1651
Ala	Ser	Gly	Gly	Pro	Leu	Pro	Ser	Cys	Phe	Thr	Pro	Ser	Pro	Ala	Pro	
340					345					350					355	
atc	ctc	aat	att	aac	tca	gcc	agc	ttc	tcc	cag	ggc	ctg	gag	cta	atg	1699
Ile	Leu	Asn	Ile	Asn	Ser	Ala	Ser	Phe	Ser	Gln	Gly	Leu	Glu	Leu	Met	
356					361					366					371	
agt	ggt	ttc	agt	gtg	cca	aaa	gag	acc	cgc	atg	tac	ccc	aaa	ctc	tca	1747
Ser	Gly	Phe	Ser	Val	Pro	Lys	Glu	Thr	Arg	Met	Tyr	Pro	Lys	Leu	Ser	

372	377	382	387	
ggc ctg cac agg agc atg gag tcc ctc cag atg cca atg agc ctc ccc				1795
Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu Pro				
388	393	398	403	
agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc cct				1843
Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro Pro				
404	409	414	419	
gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga agc				1891
Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly Ser				
420	425	430	435	
ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act ctt				1939
Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr Leu				
436	441	446	451	
ccc aag aaa ggg ctc agg tac cag ctt cag tcc cag gag gag acc aag				1987
Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser Gln Glu Glu Thr Lys				
452	457	462	467	
gag agg cga cat tcc cat acc att ggt ggg ctg cct gaa tcc gat gac				2035
Glu Arg Arg His Ser His Thr Ile Gly Gly Leu Pro Glu Ser Asp Asp				
468	473	478	483	
cag tca gag ctg cct tct ccc cct gca ctt ccc atg tct ctg agt gca				2083
Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro Met Ser Leu Ser Ala				
484	489	494	499	
aag ggc caa ctt acc aac ata gtt cac ggc tca gtg ctg tcc ctg gcc				2131
Lys Gly Gln Leu Thr Asn Ile Val His Gly Ser Val Leu Ser Leu Ala				
500	505	510	515	
tcc agt gcc tcc tcc acc tac tcc tca caa atc cgg aag ctt cgt agg				2179
Ser Ser Ala Ser Ser Thr Tyr Ser Ser Gln Ile Arg Lys Leu Arg Arg				
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gaa ctg gaa tca tcc cag gaa aaa gtg gcc acc ttg acg tct cag ctt				2227
Glu Leu Glu Ser Ser Gln Glu Lys Val Ala Thr Leu Thr Ser Gln Leu				
532	537	542	547	
tct gcc aat gct aat ctg gtg gct gct ttt gag cag agc ctg gtg aat				2275
Ser Ala Asn Ala Asn Leu Val Ala Ala Phe Glu Gln Ser Leu Val Asn				
548	553	558	563	
atg aca tcc cgc ctg cga cac ctg gca gag acg gcc gag gag aag gac				2323
Met Thr Ser Arg Leu Arg His Leu Ala Glu Thr Ala Glu Glu Lys Asp				
564	569	574	579	
act gag ctg ctg gat ttg cga gaa acc ata gac ttt ctg aag aaa aag				2371
Thr Glu Leu Leu Asp Leu Arg Glu Thr Ile Asp Phe Leu Lys Lys Lys				
580	585	590	595	
aac tct gag gcc cag gca gtc att cag gga gcc ctt aat gcc tca gaa				2419
Asn Ser Glu Ala Gln Ala Val Ile Gln Gly Ala Leu Asn Ala Ser Glu				
596	601	606	611	



ggagaaagcc cctaaaaaac tggagtagca cagtggtagc ctgaag	atg gaa cct	595
	Met Glu Pro	
	1	
ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat tca	643	
Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp Ser		
4 9 14 19		
tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct ggt	691	
Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro Gly		
20 25 30 35		
tcc ctg aag aag ggc aag acc cca cct gtg gct gta act tcc ccc atc	739	
Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro Ile		
36 41 46 51		
act cac aca gcc cag agt gcc ctc aaa gtc gca ggc aaa cct gag ggc	787	
Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu Gly		
52 57 62 67		
aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc caa	835	
Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu Gln		
68 73 78 83		
cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag aag	883	
Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys Lys		
84 89 94 99		
ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc tac	931	
Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly Tyr		
100 105 110 115		
aag aag cct cct cct gcc aca ggc aca gcc act gtc atg caa act ggt	979	
Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr Gly		
116 121 126 131		
ggt tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct gtc	1027	
Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro Val		
132 137 142 147		
aag cca gta aat ggg cgc aag act agc tta gat gtt tcc aac agt gca	1075	
Lys Pro Val Asn Gly Arg Lys Thr Ser Leu Asp Val Ser Asn Ser Ala		
148 153 158 163		
gag cca gga ttc ctg gct cct gga gcc cgt tct aac atc cag tac cgc	1123	
Glu Pro Gly Phe Leu Ala Pro Gly Ala Arg Ser Asn Ile Gln Tyr Arg		
164 169 174 179		
agc ctg ccc cgg cca gcc aag tca agt tct atg agc gtg acc ggc ggg	1171	
Ser Leu Pro Arg Pro Ala Lys Ser Ser Ser Met Ser Val Thr Gly Gly		
180 185 190 195		
cgg ggt gga cct cgc cct gtg agc agc agc att gac ccc agt ctc ctc	1219	
Arg Gly Gly Pro Arg Pro Val Ser Ser Ser Ile Asp Pro Ser Leu Leu		
196 201 206 211		
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Ser Thr Lys Gln Gly Gly Leu Thr Pro Ser Arg Leu Lys Glu Pro Thr	
212 217 222 227	
aag gta gcc agt ggg cgg acc act cca gcc cct gtc aat cag aca gat	1315
Lys Val Ala Ser Gly Arg Thr Thr Pro Ala Pro Val Asn Gln Thr Asp	
228 233 238 243	
cgg gaa aag gag aag gcc aaa gcc aag gca gtg gcc ttg gac tca gac	1363
Arg Glu Lys Glu Lys Ala Lys Ala Lys Ala Val Ala Leu Asp Ser Asp	
244 249 254 259	
aac atc tcc ttg aag agt att ggc tcc cca gaa agt act ccc aag aac	1411
Asn Ile Ser Leu Lys Ser Ile Gly Ser Pro Glu Ser Thr Pro Lys Asn	
260 265 270 275	
caa gca agc cac ccc aca gcc acc aag ctg gca gag ctg cca cca acc	1459
Gln Ala Ser His Pro Thr Ala Thr Lys Leu Ala Glu Leu Pro Pro Thr	
276 281 286 291	
cct ctc agg gcc aca gcg aag agc ttt gtc aaa cca ccc tca cta gcc	1507
Pro Leu Arg Ala Thr Ala Lys Ser Phe Val Lys Pro Pro Ser Leu Ala	
292 297 302 307	
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Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp Leu Pro Ser Ser Ser	
308 313 318 323	
gat acc acc cat gct tca aag gtc cca gat ctg cat gct aca agc tca	1603
Asp Thr Thr His Ala Ser Lys Val Pro Asp Leu His Ala Thr Ser Ser	
324 329 334 339	
gca tct ggg ggc cct ctc cct tcc tgc ttc acc ccc agt ccg gca ccc	1651
Ala Ser Gly Gly Pro Leu Pro Ser Cys Phe Thr Pro Ser Pro Ala Pro	
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Ile Leu Asn Ile Asn Ser Ala Ser Phe Ser Gln Gly Leu Glu Leu Met	
356 361 366 371	
agt ggt ttc agt gtg cca aaa gag acc cgc atg tac ccc aaa ctc tca	1747
Ser Gly Phe Ser Val Pro Lys Glu Thr Arg Met Tyr Pro Lys Leu Ser	
372 377 382 387	
ggc ctg cac agg agc atg gag tcc ctc cag atg cca atg agc ctc ccc	1795
Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu Pro	
388 393 398 403	
agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc cct	1843
Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro Pro	
404 409 414 419	
gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga agc	1891
Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly Ser	
420 425 430 435	
ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act ctt	1939
Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr Leu	



gaa acc aca ccc aaa ggt agg aca tcc agc cac aga ttg aga ggg aac	2659
Glu Thr Thr Pro Lys Gly Arg Thr Ser Ser His Arg Leu Arg Gly Asn	
676 681 686 691	
agg gag cag gaa agt aag agt att aca gat ttt tat ctg ggc cca tag	2707
Arg Glu Gln Glu Ser Lys Ser Ile Thr Asp Phe Tyr Leu Gly Pro *	
692 697 702 707	
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atgtctggac tggtcagtga ggagtaccag gggcatgacc ccagcttcct agggcatgaa	2827
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aaagagccat caaagaccat cgtaaata gccctttaca ttnttatgca aatgtgttgt	2947
gtgtccacac acacacaaac aatcttattt gatcctcact ttagttctcc aactactctt	3007
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ag	3069

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 <213> Homo sapiens

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 <222> (216)..(2129)

<220>  
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aaaaagcagg ctggtaccgg tccggaattc ctgggatatc gtcgaccac gcgtccgccc	120
acgcgtccgc ggacgcgtgg gccgccctga agaagctggt ggggtcggac caggccccgg	180
gccgggacaa gaacatcccc gccgggctgc agtcc atg aac cag gcg ttg cag	233
Met Asn Gln Ala Leu Gln	
1	
agg cgc ttc gcc aag ggg gtg cag tac aac atg aag ata gtg atc cgg	281
Arg Arg Phe Ala Lys Gly Val Gln Tyr Asn Met Lys Ile Val Ile Arg	
7 12 17 22	
gga gac agg aac acg ggc aag aca gcg ctg tgg cac cgc ctg cag ggc	329
Gly Asp Arg Asn Thr Gly Lys Thr Ala Leu Trp His Arg Leu Gln Gly	



23	28	33	38	
cgg ccg ttc gtg gag gag tac atc ccc aca cag gag atc cag gtc acc				377
Arg Pro Phe Val Glu Glu Tyr Ile Pro Thr Gln Glu Ile Gln Val Thr				
39	44	49	54	
agc atc cac tgg agc tac aag acc acg gat gac atc gtg aag gtt gaa				425
Ser Ile His Trp Ser Tyr Lys Thr Thr Asp Asp Ile Val Lys Val Glu				
55	60	65	70	
gtc tgg gat gta gta gac aaa gga aaa tgc aaa aag cga ggc gac ggc				473
Val Trp Asp Val Val Asp Lys Gly Lys Cys Lys Lys Arg Gly Asp Gly				
71	76	81	86	
tta aag atg gag aac gac ccc cag gag gcg gag tct gaa atg gcc ctg				521
Leu Lys Met Glu Asn Asp Pro Gln Glu Ala Glu Ser Glu Met Ala Leu				
87	92	97	102	
gat gct gag ttc ctg gac gtg tac aag aac tgc aac ggg gtg gtc atg				569
Asp Ala Glu Phe Leu Asp Val Tyr Lys Asn Cys Asn Gly Val Val Met				
103	108	113	118	
atg ttc gac att acc aag cag tgg acc ttc aat tac att ctc cgg gag				617
Met Phe Asp Ile Thr Lys Gln Trp Thr Phe Asn Tyr Ile Leu Arg Glu				
119	124	129	134	
ctt cca aaa gtg ccc acc cac gtg cca gtg tgc gtg ctg ggg aac tac				665
Leu Pro Lys Val Pro Thr His Val Pro Val Cys Val Leu Gly Asn Tyr				
135	140	145	150	
cgg gac atg ggc gag cac cga gtc atc ctg ccg gac gac gtg cgt gac				713
Arg Asp Met Gly Glu His Arg Val Ile Leu Pro Asp Asp Val Arg Asp				
151	156	161	166	
ttc atc gac aac ctg gac aga cct cca ggt tcc tcc tac ttc cgc tat				761
Phe Ile Asp Asn Leu Asp Arg Pro Pro Gly Ser Ser Tyr Phe Arg Tyr				
167	172	177	182	
gct gag tct tcc atg aag aac agc ttc ggc cta aag tac ctt cat aag				809
Ala Glu Ser Ser Met Lys Asn Ser Phe Gly Leu Lys Tyr Leu His Lys				
183	188	193	198	
ttc ttc aat atc cca ttt ttg cag ctt cag agg gag acg ctg ttg cgg				857
Phe Phe Asn Ile Pro Phe Leu Gln Leu Gln Arg Glu Thr Leu Leu Arg				
199	204	209	214	
cag ctg gag acg aac cag ctg gac atg gac gcc acg ctg gag gag ctg				905
Gln Leu Glu Thr Asn Gln Leu Asp Met Asp Ala Thr Leu Glu Glu Leu				
215	220	225	230	
tcg gtg cag cag gag agg gag gac cag aac tac ggc atc ttc ctg gag				953
Ser Val Gln Gln Glu Arg Glu Asp Gln Asn Tyr Gly Ile Phe Leu Glu				
231	236	241	246	
atg atg gag gct cgc agc cgt ggc cat gcg tcc cca ctg gcg gcc aac				1001
Met Met Glu Ala Arg Ser Arg Gly His Ala Ser Pro Leu Ala Ala Asn				
247	252	257	262	



agg acc gca gca ccc ccc tgg cca ggc ggt gtc tct gtt cgc aca ggt	1721
Arg Thr Ala Ala Pro Pro Trp Pro Gly Gly Val Ser Val Arg Thr Gly	
487 492 497 502	
ccg gag aag cgc agc agc acc agg ccc cct gct gag atg gag ccg ggg	1769
Pro Glu Lys Arg Ser Ser Thr Arg Pro Pro Ala Glu Met Glu Pro Gly	
503 508 513 518	
aag ggt gag cag gcc tcc tcg tcg gag agt gac ccc gag gga ccc att	1817
Lys Gly Glu Gln Ala Ser Ser Ser Glu Ser Asp Pro Glu Gly Pro Ile	
519 524 529 534	
gct gca caa atg ctg tcc ttc gtc atg gat gac ccc gac ttt gag agc	1865
Ala Ala Gln Met Leu Ser Phe Val Met Asp Asp Pro Asp Phe Glu Ser	
535 540 545 550	
gag gga tca gac aca cag cgc agg gcg gat gac ttt ccc gtg cga gat	1913
Glu Gly Ser Asp Thr Gln Arg Arg Ala Asp Asp Phe Pro Val Arg Asp	
551 556 561 566	
gac ccc tcc gat gtg act gac gag gat gag ggc cct gcc gag ccg ccc	1961
Asp Pro Ser Asp Val Thr Asp Glu Asp Glu Gly Pro Ala Glu Pro Pro	
567 572 577 582	
cca ccc ccc aag ctc cct ctc ccc gcc ttc aga ctg aag aat gac tcg	2009
Pro Pro Pro Lys Leu Pro Leu Pro Ala Phe Arg Leu Lys Asn Asp Ser	
583 588 593 598	
gac ctc ttc ggg ctg ggg ctg gag gag gcc gga ccc aag gag agc agt	2057
Asp Leu Phe Gly Leu Gly Leu Glu Glu Ala Gly Pro Lys Glu Ser Ser	
599 604 609 614	
gag gaa ggt aag gag ggc aaa acc ccc tct aag gag aag aag aaa aaa	2105
Glu Glu Gly Lys Glu Gly Lys Thr Pro Ser Lys Glu Lys Lys Lys Lys	
615 620 625 630	
aaa aaa aaa ggg cgg ccg ctc tag agtatccctc gaggggcca agcttacgcg	2159
Lys Lys Lys Gly Arg Pro Leu *	
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tcgagtgtaa tcaatnttac accc	2243

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ttttccaaga	gcagcagaaa		atg aat aaa tcc ctg ggg cca gtg tca ttc				170
			Met Asn Lys Ser Leu Gly Pro Val Ser Phe				
			1		5		
aag gac gtg gct gtg gac ttc acc cag gag gaa tgg cag cag ctg gat							218
Lys Asp Val Ala Val Asp Phe Thr Gln Glu Glu Trp Gln Gln Leu Asp							
11					21		26
cct gag cag aag ata act tac agg gat gtg atg ctg gag aac tac agc							266
Pro Glu Gln Lys Ile Thr Tyr Arg Asp Val Met Leu Glu Asn Tyr Ser							
27				32		37	42
aat cta gtt tct gtg ggg tat cac att atc aaa ccg gat gtt atc agc							314
Asn Leu Val Ser Val Gly Tyr His Ile Ile Lys Pro Asp Val Ile Ser							
43				48		53	58
aag ttg gag caa gga gaa gag cca tgg ata gta gaa gga gaa ttc cta							362
Lys Leu Glu Gln Gly Glu Glu Pro Trp Ile Val Glu Gly Glu Phe Leu							
59				64		69	74
ctt cag agc tat cca gat gaa gtc tgg caa act gat gac cta ata gag							410
Leu Gln Ser Tyr Pro Asp Glu Val Trp Gln Thr Asp Asp Leu Ile Glu							
75				80		85	90
aga atc cag gaa gag gaa aat aaa cct tca agg caa act gtg ttc att							458
Arg Ile Gln Glu Glu Glu Asn Lys Pro Ser Arg Gln Thr Val Phe Ile							
91				96		101	106
gag acc ctg att gaa gag aga ggt aat gtt cct ggt aaa act ttt gat							506
Glu Thr Leu Ile Glu Glu Arg Gly Asn Val Pro Gly Lys Thr Phe Asp							
107				112		117	122
gta gaa acg aac cct gtt cct tca aga aaa ata gcc tat aaa aat agc							554
Val Glu Thr Asn Pro Val Pro Ser Arg Lys Ile Ala Tyr Lys Asn Ser							
123				128		133	138
ctc tgt gac tca tgt gaa aag tgt tta acg tct gtt tca gaa tat att							602
Leu Cys Asp Ser Cys Glu Lys Cys Leu Thr Ser Val Ser Glu Tyr Ile							
139				144		149	154
agt agt gat gga agc tat gca aga atg aaa gct gat gaa tgt agt gga							650
Ser Ser Asp Gly Ser Tyr Ala Arg Met Lys Ala Asp Glu Cys Ser Gly							
155				160		165	170
tgt ggg aaa tca ctc ctc cat att aag ctt gag aaa act cat cca gga							698
Cys Gly Lys Ser Leu Leu His Ile Lys Leu Glu Lys Thr His Pro Gly							
171				176		181	186
gat caa gct tat gaa ttt aat caa aat ggg gaa cct tat act cta aat							746
Asp Gln Ala Tyr Glu Phe Asn Gln Asn Gly Glu Pro Tyr Thr Leu Asn							
187				192		197	202
gaa gaa agt ctt tat cag aaa att cgt att ttg gag aaa cct ttt gaa							794



427	432	437	442	
gga aaa gcc ttc tct cgg atg tca tac ctc act gta cat tat aga act				1514
Gly Lys Ala Phe Ser Arg Met Ser Tyr Leu Thr Val His Tyr Arg Thr				
443	448	453	458	
cat tca gga gag aaa ccc tat gag tgt act gaa tgt gga aaa aaa ttc				1562
His Ser Gly Glu Lys Pro Tyr Glu Cys Thr Glu Cys Gly Lys Lys Phe				
459	464	469	474	
tac cac aaa tca gca ttc aac agc cat cag aga att cat agg aga ggc				1610
Tyr His Lys Ser Ala Phe Asn Ser His Gln Arg Ile His Arg Arg Gly				
475	480	485	490	
aat atg aat gta ata gat gtg gga agg ctt ctc tga agtc agacctcatt				1660
Asn Met Asn Val Ile Asp Val Gly Arg Leu Leu *				
491	496	501		
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cgtccggtcg tcgacgtgg gctttcgggt cccgcgccca gag atg ggc tcc aag	175
	Met Gly Ser Lys

1

gca aag aag cgc gtg ctg ctg ccc acc cgc cca gcg ccc ccc acg'gtg	223
Ala Lys Lys Arg Val Leu Leu Pro Thr Arg Pro Ala Pro Pro Thr Val	
5 10 15 20	

gag cag atc ctg gag gat gtg cgg ggt gcg ccg gca gag gat cca gtg	271
Glu Gln Ile Leu Glu Asp Val Arg Gly Ala Pro Ala Glu Asp Pro Val	
21 26 31 36	
ttc acc atc ctg gcc ccg gaa gac ccc cca gtt ccc ttc agg atg atg	319
Phe Thr Ile Leu Ala Pro Glu Asp Pro Pro Val Pro Phe Arg Met Met	
37 42 47 52	
gag gat gcg gag gcc ccg gga gag cag ctc tac cag caa agc cgg gcc	367
Glu Asp Ala Glu Ala Pro Gly Glu Gln Leu Tyr Gln Gln Ser Arg Ala	
53 58 63 68	
tac gtg gct gcc aac cag cgg ctg cag cag gcg ggc aac gtg ctg agg	415
Tyr Val Ala Ala Asn Gln Arg Leu Gln Gln Ala Gly Asn Val Leu Arg	
69 74 79 84	
cag agg tgt gag ctc ctg cag cga gcc ggc gag gac ctg gag cgg gag	463
Gln Arg Cys Glu Leu Leu Gln Arg Ala Gly Glu Asp Leu Glu Arg Glu	
85 90 95 100	
gtg gcc cag atg aag cag gca gca tta ccg gca gcc gag gct gcc tcc	511
Val Ala Gln Met Lys Gln Ala Ala Leu Pro Ala Ala Glu Ala Ala Ser	
101 106 111 116	
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Ser Gly *	
117	
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Arg Asp Pro Ala Gln Gly Tyr Val Thr Phe Glu Asp Val Ala Val Tyr	
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Phe Ser Gln Glu Glu Trp Arg Leu Leu Asp Asp Ala Gln Arg Leu Leu	
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Tyr Arg Asn Val Met Leu Glu Asn Phe Thr Leu Leu Ala Ser Leu Gly	
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Leu Ala Ser Ser Lys Thr His Glu Ile Thr Gln Leu Glu Ser Trp Glu	
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Glu Pro Phe Met Pro Ala Trp Glu Val Val Thr Ser Ala Ile Pro Arg	
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Gly Cys Trp His Gly Ala Glu Ala Glu Glu Ala Pro Glu Gln Ile Ala	
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Ser Val Gly Leu Leu Ser Ser Asn Ile Gln Gln His Gln Lys Gln His	
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Cys Gly Glu Lys Pro Leu Lys Arg Gln Gln Gly Arg Val Pro Val Leu	
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Arg Ser Cys Lys Val His Leu Ser Glu Lys Ser Leu Gln Ser Arg Glu	
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Phe His Ala Gly Lys Arg His Tyr Lys Cys Ser Glu Cys Gly Lys Ala	
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Cys Gly Lys Ala Phe Arg His Asn Ser Thr Leu Val Gln His His Lys	
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Glu Arg Pro Tyr Lys Cys Ser Glu Cys Gly Lys Phe Tyr Ser His Lys	
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Gln His Gln Lys Val His Thr Gly Glu Lys Pro Phe Lys Cys Asn Glu	

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Ser Ser Leu Val Lys	His Gln Arg Val His	Thr Gly Ala Lys Pro	Tyr	
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Glu Cys Arg Glu Cys	Gly Lys Phe Phe Arg	His Asn Ser Ser Leu	Phe	
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Lys His Arg Arg Ile	His Thr Gly Glu Met	Gln *		
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Ser Gly Phe Arg Ser Thr Ser Ala Ser Met Ser Trp Val Arg Gln Arg
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cca ggg aag ggg ctg gag tgg ctt ggc cat att aaa agt aaa gat gac      482
Pro Gly Lys Gly Leu Glu Trp Leu Gly His Ile Lys Ser Lys Asp Asp
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Asp Gly Thr Thr Asp Tyr Ala Ala Pro Val Lys Gly Arg Phe Thr Ile
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Ser Arg Asp Asp Ser Glu Asn Thr Gly Arg Arg Gly Arg Glu Phe Gln
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atc tat gaa tcg tag atactgaaaa accccgcaag ttcacttcaa ctgtgcatcg      633
Ile Tyr Glu Ser  *
108

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Asp Gly Pro His Pro Val Ile Thr Pro Ser Trp Ser Pro Gly Ser Asp	
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33 38 43 48

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Cys His Glu Asp Cys Gly Val Ala Ser Leu Gln Leu Leu Asp Val Leu

49 54 59 64

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65 70 75 80

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81 86 91 96

cag gac ctc tac cgc aag cac att ggt ccc ctc ctg gag cgg gtg acc 1054

Gln Asp Leu Tyr Arg Lys His Ile Gly Pro Leu Leu Glu Arg Val Thr

97 102 107 112

gcg tcg cac ctt gac tgg acc gca cac tcg ccg gag ctc ctg cag ttc 1102

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Tyr Leu Ala Pro Glu Val Val Gly Arg Gln Arg Tyr Gly Arg Pro Val		
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Pro Tyr Trp Asp Asp Ile Ser Gln Ala Ala Lys Asp Leu Val Thr Arg	
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Ala Ala Thr Pro Glu Pro Ala Met Ala Gln Pro Asp Ser Thr Ala Pro	
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ccgtcccccg agccctcggc gccccgctga gccccgcgatc acttcctccc tgtgaccaac 180

cggcgctgca ggtagagcc tggca atg ccg ttt ggg tgt gtg act ctg ggc 232  
Met Pro Phe Gly Cys Val Thr Leu Gly  
1 5

gac aag aag aac tat aac cag cca tcg gag gtg act gac aga tat gat 280  
Asp Lys Lys Asn Tyr Asn Gln Pro Ser Glu Val Thr Asp Arg Tyr Asp  
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Leu Gly Gln Val Ile Lys Thr Glu Glu Phe Cys Glu Ile Phe Arg Ala  
26 31 36 41

aag gac aag acg aca ggc aag ctg cac acc tgc aag aag ttc cag aag 376  
Lys Asp Lys Thr Thr Gly Lys Leu His Thr Cys Lys Lys Phe Gln Lys  
42 47 52 57

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Arg Asp Gly Arg Lys Val Arg Lys Ala Ala Lys Asn Glu Ile Gly Ile  
58 63 68 73

ctc aag atg gtg aag cat ccc aac atc cta cag ctg gtg gat gtg ttt 472  
Leu Lys Met Val Lys His Pro Asn Ile Leu Gln Leu Val Asp Val Phe  
74 79 84 89

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Thr Ser Asn Val Val Arg Gln Val Leu Glu Ala Val Ala Tyr Leu His  
122 127 132 137

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Ser Leu Lys Ile Val His Arg Asn Leu Lys Leu Glu Asn Leu Val Tyr  
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Tyr Asn Arg Leu Lys Asn Ser Lys Ile Val Ile Ser Asp Phe His Leu  
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gct aag cta gaa aat ggc ctc atc aag gag ccc tgt ggg acc ccc gag 760  
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Pro Pro Phe Tyr Glu	Glu Val Glu Glu Asp	Asp Tyr Glu Asn His Asp		
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Pro Tyr Trp Asp Asp	Ile Ser Gln Ala Ala	Lys Asp Leu Val Thr Arg		
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Ser His Glu Trp Ile	Ser Gly Asn Ala Ala	Ser Asp Lys Asn Ile Lys		
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Lys Lys Ala Val Arg	Val Thr Thr Leu Met	Lys Arg Leu Arg Ala Pro		
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gag cag tcc agc acg	gct gca gcc cag tcg	gcc tca gcc aca gac act	1240	
Glu Gln Ser Ser Thr	Ala Ala Ala Gln Ser	Ala Ser Ala Thr Asp Thr		
330	335	340	345	
gcc acc ccc ggg gct	gca ggt ggg gcc aca	gct gca gct gcg agt gga	1288	
Ala Thr Pro Gly Ala	Ala Gly Gly Ala Thr	Ala Ala Ala Ala Ser Gly		
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gct acc tca gcc cct	gag ggt gat gct gct	cggt gct gca aag agt gat	1336	
Ala Thr Ser Ala Pro	Glu Gly Asp Ala Ala	Arg Ala Ala Lys Ser Asp		
362	367	372	377	
aat gtg gcc ccc gca	gac cgt agt gcc acc	cca gcc aca gat gga agt	1384	
Asn Val Ala Pro Ala	Asp Arg Ser Ala Thr	Pro Ala Thr Asp Gly Ser		
378	383	388	393	
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Ala Thr Pro Ala Thr	Asp Gly Ser Val Thr	Pro Ala Thr Asp Gly Ser		
394	399	404	409	
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Ile Thr Pro Ala Thr	Asp Gly Ser Val Thr	Pro Ala Thr Asp Arg Ser		
410	415	420	425	

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Ala Thr Pro Ser Thr Asp Gly Ile Ala Thr Pro Ala Thr Glu Glu Ser	
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Thr Val Pro Thr Thr Gln Ser Ser Ala Met Leu Ala Thr Lys Ala Ala	
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Ala Thr Pro Glu Pro Ala Met Ala Gln Pro Asp Ser Thr Ala Pro Glu	
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Gly Ala Thr Gly Gln Ala Pro Pro Ser Ser Lys Gly Glu Glu Ala Ala	
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Gly Tyr Ala Gln Glu Ser Gln Arg Glu Glu Ala Ser *	
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gcctcagtga ctgccaccct ggaggacagg gcacaacaac cgtttctgga gaga atg	357
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Gly Gly Phe Gln Arg Gly Lys Tyr Gly Thr Met Ala Glu Gly Arg Ser	
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Glu Asp Asn Leu Ser Ala Thr Pro Pro Ala Leu Arg Ile Ile Leu Val	
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Gly Lys Thr Gly Cys Gly Lys Ser Ala Thr Gly Asn Ser Ile Leu Gly	
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Cys Gln Val Lys Thr Gly Thr Trp Asn Gly Arg Lys Val Leu Val Val	
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Lys Asn Ile Gly Asp Cys Tyr Leu Leu Ser Ala Pro Gly Pro His Val	
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Ala Ile Arg Lys Val Lys Glu Val Phe Gly Thr Gly Ala Met Arg His	
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Val Val Ile Leu Phe Thr His Lys Glu Asp Leu Gly Gly Gln Ala Leu	
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Gln Glu Leu Arg Glu Asn Glu Ser Asn Trp Ala Tyr Lys Ala Leu Leu	
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 Pro Gly Leu Ala Glu Gly Gly Gln Phe Leu Gly Asp Pro Pro Pro Gly  
 6 11 16 21

tta tgt cag ccc gag ctc caa cca gac agc aac tcc aac ttc atg gca 270  
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 22 27 32 37

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 134 139 144 149

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Gln Trp Ile Arg Gly Leu Gln His Gln Leu Ile Asp Gln Gln Ala Arg	
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Arg Cys Leu Gln Gln Arg Ala Ala Pro Ser Arg Pro Gln Asp Gln Ala	
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gcaggtctgt gagcttcgtc tccctttcct tcttcgcagt gtactaatgg tcaacttg 177  
atg tgc gct ggc tgt ttt atc cac cta cta gca gat gcc cgg ctg aag 225  
Met Cys Ala Gly Cys Phe Ile His Leu Leu Ala Asp Ala Arg Leu Lys  
1 5 10 15  
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Glu Glu Gln Ala Thr Cys Pro Asn Cys Arg Cys Glu Ile Ser Lys Ser  
17 22 27 32  
ctc tgc tgc cgg aac ctg gcc gtg gag aaa gcc gtg agc gag ctg cct 321  
Leu Cys Cys Arg Asn Leu Ala Val Glu Lys Ala Val Ser Glu Leu Pro  
33 38 43 48  
tca gag tgt ggc ttc tgc ctg cgc cag ttt ccc cgc tcc ctc ctg gag 369  
Ser Glu Cys Gly Phe Cys Leu Arg Gln Phe Pro Arg Ser Leu Leu Glu  
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agg cac cag aaa gag gaa tgc cag gac agg gta acc cag tgc aag tac 417

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Lys	Arg	Ile	Gly	Cys	Pro	Trp	His	Gly	Pro	Phe	His	Glu	Leu	Thr	Val	
81					86					91						96
cac	gag	gct	gcg	tgc	gcc	cac	ccg	acc	aag	aca	ggc	agt	gag	ctg	atg	513
His	Glu	Ala	Ala	Cys	Ala	His	Pro	Thr	Lys	Thr	Gly	Ser	Glu	Leu	Met	
97					102					107						112
gag	atc	ctg	gat	ggg	atg	gac	cag	agc	cac	cgc	aag	gag	atg	cag	ctg	561
Glu	Ile	Leu	Asp	Gly	Met	Asp	Gln	Ser	His	Arg	Lys	Glu	Met	Gln	Leu	
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tac	aac	agc	atc	ttc	agc	ctg	ctc	agc	ttc	gag	aag	att	ggc	tac	aca	609
Tyr	Asn	Ser	Ile	Phe	Ser	Leu	Leu	Ser	Phe	Glu	Lys	Ile	Gly	Tyr	Thr	
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gag	gtc	cag	ttc	cgg	ccg	tac	cgc	aca	gac	gac	ttc	atc	acg	cgc	ctg	657
Glu	Val	Gln	Phe	Arg	Pro	Tyr	Arg	Thr	Asp	Asp	Phe	Ile	Thr	Arg	Leu	
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Tyr	Tyr	Glu	Thr	Pro	Arg	Phe	Thr	Val	Leu	Asn	Gln	Thr	Trp	Val	Leu	
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Lys	Ala	Arg	Val	Asn	Asp	Ser	Glu	Arg	Asn	Pro	Asn	Leu	Ser	Cys	Lys	
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cgt	acg	ctc	tcc	ttc	cag	ctc	ctc	ctc	aag	agc	aag	gtc	acg	gca	ccg	801
Arg	Thr	Leu	Ser	Phe	Gln	Leu	Leu	Leu	Lys	Ser	Lys	Val	Thr	Ala	Pro	
193					198					203						208
ctg	gag	tgc	tcc	ttc	ctg	ctg	ctc	aag	ggc	ccc	tac	gac	gac	gtg	agg	849
Leu	Glu	Cys	Ser	Phe	Leu	Leu	Leu	Lys	Gly	Pro	Tyr	Asp	Asp	Val	Arg	
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atc	agc	ccc	gtc	atc	tac	cac	ttt	gtc	ttc	acc	aac	gag	agc	aac	gag	897
Ile	Ser	Pro	Val	Ile	Tyr	His	Phe	Val	Phe	Thr	Asn	Glu	Ser	Asn	Glu	
225					230					235						240
acg	gac	tac	gtg	cca	ctg	ccc	atc	att	gac	tcc	gtg	gag	tgc	aac	aag	945
Thr	Asp	Tyr	Val	Pro	Leu	Pro	Ile	Ile	Asp	Ser	Val	Glu	Cys	Asn	Lys	
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ctg	ctg	gct	gcc	aag	aac	atc	aac	ctg	cgg	ctc	ttc	ctg	ttc	cag	ata	993
Leu	Leu	Ala	Ala	Lys	Asn	Ile	Asn	Leu	Arg	Leu	Phe	Leu	Phe	Gln	Ile	
257					262					267						272
cag	aag	tag	ggcgggg	cctcaggatg	tccgaggagc	ccacggg	cgg	catcccagca								1049
Gln	Lys	*														
273																
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Met Leu  
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Phe Gly Ser Glu Ile Cys Lys Glu Gly Lys Cys Val Asn Thr Gln Pro

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Gly Tyr Glu Cys Tyr Cys Lys Gln Gly Phe Tyr Tyr Asp Gly Asn Leu				
19	24	29	34	
ctg gaa tgc gtg gac gtg gac gag tgc ctg gac gag tcc aac tgc cgg				981
Leu Glu Cys Val Asp Val Asp Glu Cys Leu Asp Glu Ser Asn Cys Arg				
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aac gga gtg tgt gag aac acg cgc ggc ggc tac cgc tgt gcc tgc acg				1029
Asn Gly Val Cys Glu Asn Thr Arg Gly Gly Tyr Arg Cys Ala Cys Thr				
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ccc cct gcc gag tac agt ccc gcg cag cgc cag tgc ctg agc ccg gaa				1077
Pro Pro Ala Glu Tyr Ser Pro Ala Gln Arg Gln Cys Leu Ser Pro Glu				
67	72	77	82	
gag atg gac gtg gac gag tgc cag gac ccg gca gcc tgc cgc cct ggc				1125
Glu Met Asp Val Asp Glu Cys Gln Asp Pro Ala Ala Cys Arg Pro Gly				
83	88	93	98	
cgc tgc gtc aac ctg ccg ggc tcc tac cgc tgc gag tgt cgc ccg ccc				1173
Arg Cys Val Asn Leu Pro Gly Ser Tyr Arg Cys Glu Cys Arg Pro Pro				
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tgg gtg ccc ggg ccc tcc ggc cgc gat tgc cag ctc ccc gag agc ccg				1221
Trp Val Pro Gly Pro Ser Gly Arg Asp Cys Gln Leu Pro Glu Ser Pro				
115	120	125	130	
gcc gag cgt gcc ccg gag cgg cgc gac gtg tgc tgg agc cag cgc gga				1269
Ala Glu Arg Ala Pro Glu Arg Arg Asp Val Cys Trp Ser Gln Arg Gly				
131	136	141	146	
gag gac ggc atg tgc gct ggc ccc ctg gcc ggg cct gcc ctc acc ttc				1317
Glu Asp Gly Met Cys Ala Gly Pro Leu Ala Gly Pro Ala Leu Thr Phe				
147	152	157	162	
gac gac tgc tgc tgc cgc cag ggc cgc ggc tgg ggc gcc caa tgc cga				1365
Asp Asp Cys Cys Cys Arg Gln Gly Arg Gly Trp Gly Ala Gln Cys Arg				
163	168	173	178	
ccg tgc ccg ccg cgc ggc gcg ggg tcc cat tgc ccg aca tcg cag agc				1413
Pro Cys Pro Pro Arg Gly Ala Gly Ser His Cys Pro Thr Ser Gln Ser				
179	184	189	194	
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Glu Ser Asn Ser Phe Trp Asp Thr Ser Pro Leu Leu Leu Gly Lys Pro				
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Pro Arg Asp Glu Asp Ser Ser Glu Glu Asp Ser Asp Glu Cys Arg Cys				
211	216	221	226	
gtg agt ggc cgc tgc gtg ccg cgg ccg ggc ggc gcc gtg tgc gag tgt				1557
Val Ser Gly Arg Cys Val Pro Arg Pro Gly Gly Ala Val Cys Glu Cys				
227	232	237	242	





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Glu Glu Glu Asn Ile Pro Ala Leu Lys Ala Leu Leu Glu Lys Cys Lys	
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Asp Val Asp Glu Arg Asn Glu Cys Gly Gln Thr Pro Leu Met Ile Ala	
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 gcc gaa caa ggc aat ctg gaa ata gtg aag gaa tta att aag aat gga	374
Ala Glu Gln Gly Asn Leu Glu Ile Val Lys Glu Leu Ile Lys Asn Gly	
46 51 56 61	
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Ala Asn Cys Asn Leu Glu Asp Leu Asp Asn Trp Thr Ala Leu Ile Ser	
62 67 72 77	
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Gly Val Asn Leu Glu His Arg Asp Met Gly Gly Trp Thr Ala Leu Met	
94 99 104 109	
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Trp Ala Cys Tyr Lys Gly Arg Thr Asp Val Val Glu Leu Leu Leu Ser	
110 115 120 125	
 cat ggt gcc aat cca agt gtc act ggt ctg cag tac agt gtt tac cca	614
His Gly Ala Asn Pro Ser Val Thr Gly Leu Gln Tyr Ser Val Tyr Pro	
126 131 136 141	
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Ile Ile Trp Ala Ala Gly Arg Gly His Ala Asp Ile Val His Leu Leu	
142 147 152 157	
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Leu Gln Asn Gly Ala Lys Val Asn Cys Ser Asp Lys Tyr Gly Thr Thr	
158 163 168 173	
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Pro Leu Val Trp Ala Ala Arg Lys Gly His Leu Glu Cys Val Lys His	
174 179 184 189	
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Leu Leu Ala Met Gly Ala Asp Val Asp Gln Glu Gly Ala Asn Ser Met	
190 195 200 205	
 act gca ctt att gtg gca gtg aaa gga ggt tac aca cag tca gta aaa	854
Thr Ala Leu Ile Val Ala Val Lys Gly Gly Tyr Thr Gln Ser Val Lys	
206 211 216 221	

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Glu Ile Leu Lys Arg Asn Pro Asn Val Asn Leu Thr Asp Lys Asp Gly	
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Asn Thr Ala Leu Met Ile Ala Ser Lys Glu Gly His Thr Glu Ile Val	
238 243 248 253	
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Gln Asp Leu Leu Asp Ala Gly Thr Tyr Val Asn Ile Pro Asp Arg Ser	
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Gly Asp Thr Val Leu Ile Gly Ala Val Arg Gly Gly His Val Glu Ile	
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Val Arg Ala Leu Leu Gln Lys Tyr Ala Asp Ile Asp Ile Arg Gly Gln	
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Asp Asn Lys Thr Ala Leu Tyr Trp Ala Val Glu Lys Gly Asn Ala Thr	
302 307 312 317	
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Met Val Arg Asp Ile Leu Gln Cys Asn Pro Asp Thr Glu Ile Cys Thr	
318 323 328 333	
aag gat ggt gaa acg cca ctt ata aag gct acc aag atg aga aac att	1238
Lys Asp Gly Glu Thr Pro Leu Ile Lys Ala Thr Lys Met Arg Asn Ile	
334 339 344 349	
gaa gtg gtg gag ctg ctg cta gat aaa ggt gct aaa gtg tct gct gta	1286
Glu Val Val Glu Leu Leu Leu Asp Lys Gly Ala Lys Val Ser Ala Val	
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Asp Lys Lys Gly Asp Thr Pro Leu His Ile Ala Ile Arg Gly Arg Ser	
366 371 376 381	
cgg aaa ctg gca gaa ctg ctt tta aga aat ccc aaa gat ggg cga tta	1382
Arg Lys Leu Ala Glu Leu Leu Leu Arg Asn Pro Lys Asp Gly Arg Leu	
382 387 392 397	
ctt tat agg ccc aac aaa gca ggc gag act cct tat aat att gac tgt	1430
Leu Tyr Arg Pro Asn Lys Ala Gly Glu Thr Pro Tyr Asn Ile Asp Cys	
398 403 408 413	
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Ser His Gln Lys Ser Ile Leu Thr Gln Ile Phe Gly Ala Arg His Leu	
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Cys	Val	Gly	Leu	Tyr	Ala	Gln	Trp	Gly	Ser	Gly	Lys	Ser	Phe	Leu	Leu		
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Lys	Lys	Leu	Glu	Asp	Glu	Met	Lys	Thr	Phe	Ala	Gly	Gln	Gln	Ile	Glu		
478					483					488					493		
cct	ctc	ttt	cag	ttc	tca	tgg	ctc	ata	gtg	ttt	ctt	acc	ctg	cta	ctt	1718	
Pro	Leu	Phe	Gln	Phe	Ser	Trp	Leu	Ile	Val	Phe	Leu	Thr	Leu	Leu	Leu		
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510					515					520					525		
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526					531					536					541		
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Ile	Val	Ile	Tyr	Phe	Gly	Gly	Arg	Arg	Glu	Gly	Glu	Ser	Trp	Asn	Trp		
542					547					552					557		
gcc	tgg	gtc	ctc	agc	act	aga	ttg	gca	aga	cat	att	gga	tat	ttg	gaa	1910	
Ala	Trp	Val	Leu	Ser	Thr	Arg	Leu	Ala	Arg	His	Ile	Gly	Tyr	Leu	Glu		
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Lys	Thr	Cys	Cys	Leu	Pro	Ser	Phe	Val	Ile	Phe	Leu	Phe	Ile	Ile	Gly		
654					659					664					669		
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Lys His Leu Thr Val	Asn Ala Val Leu Ile	Ser Ile Ala Ser Val	Val	
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Gly Leu Ala Phe Val	Leu Asn Cys Arg Thr	Trp Trp Gln Val Leu	Asp	
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tcg ctc ctg aat tcc	caa aga aaa cgc ctc	cat aat gca gcc tcc	aaa	2390
Ser Leu Leu Asn Ser	Gln Arg Lys Arg Leu	His Asn Ala Ala Ser	Lys	
718	723	728	733	
ctg cac aaa ttg aaa	agt gaa gga ttc atg	aaa gtt ctt aaa tgt	gaa	2438
Leu His Lys Leu Lys	Ser Glu Gly Phe Met	Lys Val Leu Lys Cys	Glu	
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gtg gaa ttg atg gcc	agg atg gca aaa acc	att gac agc ttc act	cag	2486
Val Glu Leu Met Ala	Arg Met Ala Lys Thr	Ile Asp Ser Phe Thr	Gln	
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Asn Gln Thr Arg Leu	Val Val Ile Ile Asp	Gly Leu Asp Ala Cys	Glu	
766	771	776	781	
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Gln Asp Lys Val Leu	Gln Met Leu Asp Thr	Val Arg Val Leu Phe	Ser	
782	787	792	797	
aaa ggc ccg ttc att	gcc att ttt gca agt	gat cca cat att atc	ata	2630
Lys Gly Pro Phe Ile	Ala Ile Phe Ala Ser	Asp Pro His Ile Ile	Ile	
798	803	808	813	
aag gca att aac cag	aac ctc aat agt gtg	ctt cgg gat tca aat	ata	2678
Lys Ala Ile Asn Gln	Asn Leu Asn Ser Val	Leu Arg Asp Ser Asn	Ile	
814	819	824	829	
aat ggc cat gac tac	atg cgc aac ata gtc	cac ttg cct gtg ttc	ctt	2726
Asn Gly His Asp Tyr	Met Arg Asn Ile Val	His Leu Pro Val Phe	Leu	
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aat agt cgt gga cta	agc aat gca aga aaa	ttt ctc gta act tca	gca	2774
Asn Ser Arg Gly Leu	Ser Asn Ala Arg Lys	Phe Leu Val Thr Ser	Ala	
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Thr Asn Gly Asp Val	Pro Cys Ser Asp Thr	Thr Gly Ile Gln Glu	Asp	
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Ala Asp Arg Arg Val	Ser Gln Asn Ser Leu	Gly Glu Met Thr Lys	Leu	
878	883	888	893	
ggt agc aag aca gcc	ctc aat aga cgg gac	act tac cga aga agg	cag	2918
Gly Ser Lys Thr Ala	Leu Asn Arg Arg Asp	Thr Tyr Arg Arg Arg	Gln	
894	899	904	909	

atg cag agg acc atc act cgc cag atg tcc ttt gat ctt aca aaa ctg	2966
Met Gln Arg Thr Ile Thr Arg Gln Met Ser Phe Asp Leu Thr Lys Leu	
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ctg gtt acc gag gac tgg ttc agt gac atc agt ccc cag acc atg aga	3014
Leu Val Thr Glu Asp Trp Phe Ser Asp Ile Ser Pro Gln Thr Met Arg	
926 931 936 941	
aga tta ctt aat att gtt tct gtg aca gga cga tta ctg aga gcc aat	3062
Arg Leu Leu Asn Ile Val Ser Val Thr Gly Arg Leu Leu Arg Ala Asn	
942 947 952 957	
cag att agt ttc aac tgg gac agg ctt gct agc tgg atc aac ctt act	3110
Gln Ile Ser Phe Asn Trp Asp Arg Leu Ala Ser Trp Ile Asn Leu Thr	
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Glu Gln Trp Pro Tyr Arg Thr Ser Trp Leu Ile Leu Tyr Leu Glu Glu	
974 979 984 989	
act gaa ggt att cca gat caa atg aca tta aaa acc atc tac gaa aga	3206
Thr Glu Gly Ile Pro Asp Gln Met Thr Leu Lys Thr Ile Tyr Glu Arg	
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Ile Ser Lys Asn Ile Pro Thr Thr Lys Asp Val Glu Pro Leu Leu Glu	
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Ile Asp Gly Asp Ile Arg Asn Phe Glu Val Phe Leu Ser Ser Arg Thr	
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Pro Val Leu Val Ala Arg Asp Val Lys Val Phe Leu Pro Cys Thr Val	
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Asn Leu Asp Pro Lys Leu Arg Glu Ile Ile Ala Asp Val Arg Ala Ala	
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Arg Glu Gln Ile Ser Ile Gly Gly Leu Ala Tyr Pro Pro Leu Pro Leu	
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Val Cys Ser Ser Thr Ser Phe Asn Gly Pro Phe Ala Gly Gly Val Val	
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Ser Pro Gln Pro His Ser Ser Tyr Tyr Ser Gly Met Thr Gly Pro Gln	
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His Pro Phe Tyr Asn Arg Gly Ser Gly Pro Ala Pro Gly Pro Val Val	
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Leu Leu Asn Ser Leu Asn Val Asp Ala Val Cys Glu Lys Leu Lys Gln	
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Ile Glu Gly Leu Asp Gln Ser Met Leu Pro Gln Tyr Cys Thr Thr Ile	
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Lys Lys Ala Asn Ile Asn Gly Arg Val Leu Ala Gln Cys Asn Ile Asp	
1182 1187 1192 1197	
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Glu Leu Lys Lys Glu Met Asn Met Asn Phe Gly Asp Trp His Leu Phe	
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Arg Ser Thr Val Leu Glu Met Arg Asn Ala Glu Ser His Val Val Pro	
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Glu Asp Pro Arg Phe Leu Ser Glu Ser Ser Ser Gly Pro Ala Pro His	
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Gly Glu Pro Ala Arg Arg Ala Ser His Asn Glu Leu Pro His Thr Glu	
1246 1251 1256 1261	
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Leu Ser Ser Gln Thr Pro Tyr Thr Leu Asn Phe Ser Phe Glu Glu Leu	
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Asn Thr Leu Gly Leu Asp Glu Gly Ala Pro Arg His Ser Asn Leu Ser	
1278 1283 1288 1293	
tgg cag tca caa act cgc aga acc cca agt ctt tgg agt ctc aat tcc	4118
Trp Gln Ser Gln Thr Arg Arg Thr Pro Ser Leu Ser Ser Leu Asn Ser	
1294 1299 1304 1309	
cag gat tcc agt att gaa att tca aag ctt act gat aag gtg cag gcc	4166
Gln Asp Ser Ser Ile Glu Ile Ser Lys Leu Thr Asp Lys Val Gln Ala	
1310 1315 1320 1325	
gag tat aga gat gcc tat aga gaa tac att gct cag atg tcc cag tta	4214
Glu Tyr Arg Asp Ala Tyr Arg Glu Tyr Ile Ala Gln Met Ser Gln Leu	
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Glu Gly Gly Pro Gly Ser Thr Thr Ile Ser Gly Arg Ser Ser Pro His	
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Lys	Lys	Ser	Ser	Glu	Arg	Ser	Ser	Leu	Phe	Gln	Thr	Asp	Leu	Lys	Leu		
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Lys	Gly	Ser	Gly	Leu	Arg	Tyr	Gln	Lys	Leu	Pro	Ser	Asp	Glu	Asp	Glu		
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Asp	Arg	Lys	Ala	Glu	Gly	Lys	Val	Glu	Arg	Val	Pro	Lys	Ser	Pro	Glu		
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His	Ser	Ala	Glu	Pro	Ile	Arg	Thr	Phe	Ile	Lys	Ala	Lys	Glu	Tyr	Leu		
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Ser	Asp	Ala	Leu	Leu	Asp	Lys	Lys	Asp	Ser	Ser	Asp	Ser	Gly	Val	Arg		
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Ser	Ser	Glu	Ser	Ser	Pro	Asn	His	Ser	Leu	His	Asn	Glu	Val	Ala	Asp		
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Asp	Ser	Gln	Leu	Glu	Lys	Ala	Asn	Leu	Ile	Glu	Leu	Glu	Asp	Asp	Ser		
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His	Ser	Gly	Lys	Arg	Gly	Ile	Pro	His	Ser	Leu	Ser	Gly	Leu	Gln	Asp		
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Pro	Ile	Ile	Ala	Arg	Met	Ser	Ile	Cys	Ser	Glu	Asp	Lys	Lys	Ser	Pro		

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Cys Gln Lys Ala Tyr Asn Leu Asn Arg Thr Pro Ser Thr Val Thr Leu				
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Asn Asn Asn Ser Ala Pro Ala Asn Arg Ala Asn Gln Asn Phe Asp Glu				
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Met Glu Gly Ile Arg Glu Thr Ser Gln Val Ile Leu Arg Pro Ser Ser				
1646	1651	1656	1661	
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Ser Pro Asn Pro Thr Thr Ile Gln Asn Glu Asn Leu Lys Ser Met Thr				
1662	1667	1672	1677	
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His Lys Arg Ser Gln Arg Ser Ser Tyr Thr Arg Leu Ser Lys Asp Pro				
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Pro Glu Leu His Ala Ala Ala Ser Ser Glu Ser Thr Gly Phe Gly Glu				
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Glu Arg Glu Ser Ile Leu *				
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 Pro Glu Arg Ala Cys His Asp Ala Ala Gly Thr Leu Glu Val Asp Phe  
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 Phe Leu Phe Leu Asn Phe Gly Thr Val Asp Leu Ala Val Arg Lys Glu  
 31 36 41 46

aca acg act gag caa gca cta cca cca gca ctg tta ctg gga att aga 613  
 Thr Thr Thr Glu Gln Ala Leu Pro Pro Ala Leu Leu Leu Gly Ile Arg  
 47 52 57 62

aga cct gag ttt ctg tcc aga ccc tca gtg caa act gag gat gct cca 661

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Ser	Lys	Val	Asn	Tyr	Val	Leu	Cys	Leu	Leu	Ile	Ala	Glu	Cys	Ser	Pro	
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Gly	Pro	Ser	Asp	Tyr	Leu	Pro	Cys	Ala	Ile	Pro	Ser	Ala	Tyr	Arg	Pro	
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Gly	Thr	Trp	Ile	Phe	Ala	Arg	Asp	Asp	Ser	Tyr	His	Leu	Thr	Thr	Asp	
111					116					121					126	
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Glu	Asp	Thr	His	Ser	Ser	Gly	Pro	Leu	*							
127					132											
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Ser	Leu	Arg	Cys	Ala	Asp	Leu	Thr	Leu	Pro	Glu	Asp	Ile	Ser	Gln	Leu	
26					31					36					41	
tgt	aaa	gat	ata	aat	aat	gat	tac	ctg	gca	gaa	aga	tct	att	gaa	gaa	435

Cys	Lys	Asp	Ile	Asn	Asn	Asp	Tyr	Leu	Ala	Glu	Arg	Ser	Ile	Glu	Glu	
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Val	Tyr	Tyr	Leu	Trp	Cys	Leu	Ala	Gly	Gly	Asp	Leu	Glu	Lys	Glu	Leu	
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Tyr	Gln	Leu	Asn	Arg	Ile	Ile	Leu	Phe	Asp	Arg	Leu	Leu	Lys	Ala	Tyr	
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Pro	Tyr	Lys	Lys	Asn	Gln	Ile	Trp	Lys	Glu	Ala	Arg	Val	Asp	Ile	Pro	
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Pro	Leu	Met	Arg	Gly	Leu	Thr	Trp	Ala	Ala	Leu	Leu	Gly	Val	Glu	Gly	
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Thr	Asp	Arg	Gln	Ile	Glu	Val	Asp	Ile	Pro	Arg	Cys	His	Gln	Tyr	Asp	
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Glu	Leu	Leu	Ser	Ser	Pro	Glu	Gly	His	Ala	Lys	Phe	Arg	Arg	Val	Leu	
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Lys	Ala	Trp	Val	Val	Ser	His	Pro	Asp	Leu	Val	Tyr	Trp	Gln	Gly	Leu	

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Asp Ser Leu Cys Ala Pro Phe Leu Tyr Leu Asn Phe Asn Asn Glu Ala				
282	287	292	297	
ttg gct tat gca tgt atg tct gct ttt att ccc aaa tac ctg tat aac				1203
Leu Ala Tyr Ala Cys Met Ser Ala Phe Ile Pro Lys Tyr Leu Tyr Asn				
298	303	308	313	
ttc ttc tta aaa gac aac tca cat gta ata caa gag tat ctg act gtc				1251
Phe Phe Leu Lys Asp Asn Ser His Val Ile Gln Glu Tyr Leu Thr Val				
314	319	324	329	
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Phe Ser Gln Met Ile Ala Phe His Asp Pro Glu Leu Ser Asn His Leu				
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aat gag att ggt ttc att cca gat ctc tat gcc atc cct tgg ttt ctt				1347
Asn Glu Ile Gly Phe Ile Pro Asp Leu Tyr Ala Ile Pro Trp Phe Leu				
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acc atg ttt act cat gta ttt cca cta cac aaa att ttc cac ctc tgg				1395
Thr Met Phe Thr His Val Phe Pro Leu His Lys Ile Phe His Leu Trp				
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gat acc tta cta ctt ggg aat tcc tct ttc cca ttc tgt att ggg agt				1443
Asp Thr Leu Leu Leu Gly Asn Ser Ser Phe Pro Phe Cys Ile Gly Ser				
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agc aat tct tca ggc agc tgc ggg acc ggc ttt tgg gct aat ggc ttt				1491
Ser Asn Ser Ser Gly Ser Cys Gly Thr Gly Phe Trp Ala Asn Gly Phe				
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aat gag tgt att ctt ctc ttc tcc gat tta cca gaa att gac att gaa				1539
Asn Glu Cys Ile Leu Leu Phe Ser Asp Leu Pro Glu Ile Asp Ile Glu				
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Arg Cys Val Arg Glu Ser Ile Asn Leu Phe Cys Trp Thr Pro Lys Ser				
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Ala Thr Tyr Arg Gln His Ala Gln Pro Pro Lys Pro Ser Ser Asp Ser				
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Ser Gly Gly Arg Ser Ser Ala Pro Tyr Phe Ser Ala Glu Cys Pro Asp				
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Pro Pro Lys Thr Asp Leu Ser Arg Glu Ser Ile Pro Leu Asn Asp Leu				
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Lys Ser Glu Val Ser Pro Arg Ile Ser Ala Glu Asp Leu Ile Asp Leu				
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Leu Asp Pro Gly Thr Arg Asp Ser Tyr Gly Ala Thr Ser His Leu Pro
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aac aag ggg gcc ctg gcg aag gtc aag aac aac ttc aaa gac ttg atg   150
Asn Lys Gly Ala Leu Ala Lys Val Lys Asn Asn Phe Lys Asp Leu Met
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tcc aaa ctg acg gag ggc cag tat gtg ctg tgc cgg tgg aca gat ggc   198
Ser Lys Leu Thr Glu Gly Gln Tyr Val Leu Cys Arg Trp Thr Asp Gly
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ctg tac tac ctc ggg aag atc aag agg gtc agc agc tct aag caa agc   246
Leu Tyr Tyr Leu Gly Lys Ile Lys Arg Val Ser Ser Ser Lys Gln Ser
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gac ata cag cat gcc ggt gtt cca gga gag gag ccc aag tgc aac atc   342
Asp Ile Gln His Ala Gly Val Pro Gly Glu Glu Pro Lys Cys Asn Ile
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tgc cta ggg aag aca tca ggg ccg ctg aat gag atc ctc atc tgc ggg   390
Cys Leu Gly Lys Thr Ser Gly Pro Leu Asn Glu Ile Leu Ile Cys Gly
  102                      107                      112                      117

aag tgt ggc ctg ggt tac cac cag cag tgc cac atc ccc ata gcg ggc   438
Lys Cys Gly Leu Gly Tyr His Gln Gln Cys His Ile Pro Ile Ala Gly
  118                      123                      128                      133

agt gct gac cag ccc ctg ctc aca cct tgg ttc tgc cga cgc tgc atc   486
Ser Ala Asp Gln Pro Leu Leu Thr Pro Trp Phe Cys Arg Arg Cys Ile
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ttc gca ctg gct gtg cgg aaa ggc ggc gcg ctg aag aag ggc gcc atc   534
Phe Ala Leu Ala Val Arg Lys Gly Gly Ala Leu Lys Lys Gly Ala Ile
  150                      155                      160                      165

gcc agg acg ctg cag gcc gtg aag atg gtg ctg tcc tac cag ccc gag   582
Ala Arg Thr Leu Gln Ala Val Lys Met Val Leu Ser Tyr Gln Pro Glu
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gag ctc gag tgg gac tcg ccc cat cgc acc aac cag cag caa tgc tac   630
Glu Leu Glu Trp Asp Ser Pro His Arg Thr Asn Gln Gln Gln Cys Tyr
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Cys Tyr Cys Gly Gly Pro Gly Glu Trp Tyr Leu Arg Met Leu Gln Cys				
198	203	208	213	
tac cgg tgc agg cag tgg ttc cac gag gcc tgc acc cag tgc ctc aat				726
Tyr Arg Cys Arg Gln Trp Phe His Glu Ala Cys Thr Gln Cys Leu Asn				
214	219	224	229	
gag ccc atg atg ttt gga gac cgg ttt tac ctg ttc ttc tgc tcc gtg				774
Glu Pro Met Met Phe Gly Asp Arg Phe Tyr Leu Phe Phe Cys Ser Val				
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Cys Asn Gln Gly Pro Glu Tyr Ile Glu Arg Leu Pro Leu Arg Trp Val				
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Asp Val Val His Leu Ala Leu Tyr Asn Leu Gly Val Gln Ser Lys Lys				
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Lys Tyr Phe Asp Phe Glu Glu Ile Leu Ala Phe Val Asn His His Trp				
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Gly Pro His Leu Leu Asn Ala Leu Asn Ser Tyr Lys Ser Arg Phe Leu				
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Cys Gly Lys Glu Ile Lys Lys Lys Lys Cys Ile Phe Arg Leu Arg Ile				
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Arg Val Pro Pro Asn Pro Pro Gly Lys Leu Leu Pro Asp Lys Gly Leu				
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Leu Pro Asn Glu Asn Ser Ala Ser Ser Glu Leu Arg Lys Arg Gly Lys				
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agc aag cct ggt ttg ttg cct cac gaa ttc cag cag cag aaa agg cga				1206
Ser Lys Pro Gly Leu Leu Pro His Glu Phe Gln Gln Gln Lys Arg Arg				
374	379	384	389	
gtt tat aga aga aaa aga tca aag ttt ttg ctg gaa gat gct att ccc				1254
Val Tyr Arg Arg Lys Arg Ser Lys Phe Leu Leu Glu Asp Ala Ile Pro				
390	395	400	405	
agt agt gac ttc acc tca gcc tgg agc acc aac cac cac ctg gct agc				1302
Ser Ser Asp Phe Thr Ser Ala Trp Ser Thr Asn His His Leu Ala Ser				
406	411	416	421	

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Val Gly Ser Arg Lys Arg Lys Leu Ala Ala Lys Ala Tyr Met Pro Leu	
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 Pro Pro Cys Phe Ser His Lys Thr Trp Val Phe Ser Val Leu Met Gly  
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 Ser Cys Leu Leu Val Thr Ser Gly Phe Ser Leu Tyr Leu Gly Asn Val  
 60 65 70 75

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Phe Pro Ala Glu Met Asp Tyr Leu Arg Cys Ala Ala Gly Ser Cys Ile	
76 81 86 91	
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Pro Ser Ala Ile Val Ser Phe Thr Val Ser Arg Arg Asn Ala Asn Val	
92 97 102 107	
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Ile Pro Asn Phe Gln Ile Leu Phe Val Ser Thr Phe Ala Val Thr Thr	
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Thr Cys Leu Ile Trp Phe Gly Cys Lys Leu Val Leu Asn Pro Ser Ala	
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Ile Asn Ile Asn Phe Asn Leu Ile Leu Leu Leu Leu Leu Glu Leu Leu	
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Met Ala Ala Thr Val Ile Ile Ala Ala Arg Ser Ser Glu Glu Asp Cys	
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Lys Lys Lys Lys Gly Ser Met Ser Asp Ser Ala Asn Ile Leu Asp Glu	
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Val Pro Phe Pro Ala Arg Val Leu Lys Ser Tyr Ser Val Val Glu Val	
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Ile Ala Gly Ile Ser Ala Val Leu Gly Gly Ile Ile Ala Leu Asn Val	
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Asp Asp Ser Val Ser Gly Pro His Leu Ser Val Thr Phe Phe Trp Ile	
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Leu Val Ala Cys Phe Pro Ser Ala Ile Ala Ser His Val Ala Ala Glu	
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Cys Pro Ser Lys Cys Leu Val Glu Val Leu Ile Ala Ile Ser Ser Leu	
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Thr Ser Pro Leu Leu Phe Thr Ala Ser Gly Tyr Leu Ser Phe Ser Ile	
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Ser Tyr Asp Val Leu Leu Leu Leu Leu Leu Val Leu Leu Leu Gln	
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Ser Ala Arg Leu Gln Gly Ala Ser Trp Asp Thr Gln Asn Gly Pro Gln	
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Glu Arg Leu Ala Gly Glu Val Ala Arg Ser Pro Leu Lys Glu Phe Asp	
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Lys Glu Lys Ala Trp Arg Ala Val Val Val Gln Met Ala Gln *	
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Lys Tyr Asp Phe Tyr Ile Gly Leu Gly Leu Ala Met Ser Ser Ser Ile	
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Phe Ile Gly Gly Ser Phe Ile Leu Lys Lys Lys Gly Leu Leu Arg Leu	
23 28 33 38	
gcc agg aaa ggc tct atg aga gca ggt caa ggt ggc cat gca tat ctt	496
Ala Arg Lys Gly Ser Met Arg Ala Gly Gln Gly Gly His Ala Tyr Leu	
39 44 49 54	
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Lys Glu Trp Leu Trp Trp Ala Gly Leu Leu Ser Met Gly Ala Gly Glu	
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Val Ala Asn Phe Ala Ala Tyr Ala Phe Ala Pro Ala Thr Leu Val Thr	
71 76 81 86	
cca cta gga gct ctc agc gtg cta gta agt gcc att ctt tct tca tac	640
Pro Leu Gly Ala Leu Ser Val Leu Val Ser Ala Ile Leu Ser Ser Tyr	
87 92 97 102	
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Phe Leu Asn Glu Arg Leu Asn Leu His Gly Lys Ile Gly Cys Leu Leu	
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agt att cta gga tct aca gtt atg gtc att cat gct cca aag gaa gag	736
Ser Ile Leu Gly Ser Thr Val Met Val Ile His Ala Pro Lys Glu Glu	
119 124 129 134	
gag att gag act tta aat gaa atg tct cac aag cta ggt gat cca ggt	784
Glu Ile Glu Thr Leu Asn Glu Met Ser His Lys Leu Gly Asp Pro Gly	
135 140 145 150	
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Phe Val Val Phe Ala Thr Leu Val Val Ile Val Ala Leu Ile Leu Ile	
151 156 161 166	
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Phe Val Val Gly Pro Arg His Gly Gln Thr Asn Ile Leu Val Tyr Ile	
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Thr Ile Cys Ser Val Ile Gly Ala Phe Ser Val Ser Cys Val Lys Gly	
183 188 193 198	
ctg ggc att gct atc aag gag ctg ttt gca ggg aag cct gtg ctg cgg	976
Leu Gly Ile Ala Ile Lys Glu Leu Phe Ala Gly Lys Pro Val Leu Arg	
199 204 209 214	



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His Pro Leu Ala Trp Ile Leu Leu Leu Ser Leu Ile Val Cys Val Ser	
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Thr Gln Ile Asn Tyr Leu Asn Arg Ala Leu Asp Ile Phe Asn Thr Ser	
231 236 241 246	
att gtg act cca ata tat tat gta ttc ttt aca aca tca gtt tta act	1120
Ile Val Thr Pro Ile Tyr Tyr Val Phe Phe Thr Thr Ser Val Leu Thr	
247 252 257 262	
tgt tca gct att ctt ttt aag gag tgg caa gat atg cct gtt gac gat	1168
Cys Ser Ala Ile Leu Phe Lys Glu Trp Gln Asp Met Pro Val Asp Asp	
263 268 273 278	
gtc att ggt act ttg agt ggc ttc ttt aca atc att gtg ggg ata ttc	1216
Val Ile Gly Thr Leu Ser Gly Phe Phe Thr Ile Ile Val Gly Ile Phe	
279 284 289 294	
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Leu Leu His Ala Phe Lys Asp Val Ser Phe Ser Leu Ala Ser Leu Pro	
295 300 305 310	
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Val Ser Phe Arg Lys Asp Glu Lys Ala Met Asn Gly Asn Leu Ser Asn	
311 316 321 326	
atg tat gaa gtt ctt aat aat aat gaa gaa agc tta acc tgt gga atc	1360
Met Tyr Glu Val Leu Asn Asn Asn Glu Glu Ser Leu Thr Cys Gly Ile	
327 332 337 342	
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Glu Gln His Thr Gly Glu Asn Val Ser Arg Arg Asn Gly Asn Leu Thr	
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Ala Phe *	
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Arg Arg Lys Gln Ser His Pro Gln Pro Val Lys Cys Glu Gly Val Lys  
3 8 13 18  
gtg gat act gaa gac tcc ctc gac gaa gga ccc ggg gcc ctg gta ttg 151  
Val Asp Thr Glu Asp Ser Leu Asp Glu Gly Pro Gly Ala Leu Val Leu  
19 24 29 34  
gag agt gat ttg cta cta ggc cag gat ctg gag ttt gag gag gaa gag 199  
Glu Ser Asp Leu Leu Leu Gly Gln Asp Leu Glu Phe Glu Glu Glu Glu  
35 40 45 50  
gaa gag gag gaa ggc gac ggc aac agt gac cag ctc atg ggc ttc gag 247  
Glu Glu Glu Glu Gly Asp Gly Asn Ser Asp Gln Leu Met Gly Phe Glu  
51 56 61 66  
aga gac tcg gaa gga gac tct ctg ggg gcc agg cct ggg ctt ccc tat 295  
Arg Asp Ser Glu Gly Asp Ser Leu Gly Ala Arg Pro Gly Leu Pro Tyr  
67 72 77 82  
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Gly Leu Ser Asp Asp Glu Ser Gly Gly Gly Arg Ala Leu Ser Ala Glu  
83 88 93 98  
agt gaa gtt gag gag cca gcc agg ggt cca ggg gag gcc agg ggt gag 391  
Ser Glu Val Glu Glu Pro Ala Arg Gly Pro Gly Glu Ala Arg Gly Glu  
99 104 109 114

agg cca ggc cca gcc tgc cag ctg tgt ggg ggg ccg aca gat ttg agc	439
Arg Pro Gly Pro Ala Cys Gln Leu Cys Gly Gly Pro Thr Asp Leu Ser	
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Leu His Val Pro Pro Gly Gly Ala Ser Phe Leu Pro Asp Cys Gly Gln	
131 136 141 146	
ctg cgg ggt gaa ggg gag ggc ctc tgc ggg act gga tca gaa cca ctg	535
Leu Arg Gly Glu Gly Glu Gly Leu Cys Gly Thr Gly Ser Glu Pro Leu	
147 152 157 162	
cca gag ctg cta ttc cct tgg acc tgc cgg ggc tgt gga caa gag ctg	583
Pro Glu Leu Leu Phe Pro Trp Thr Cys Arg Gly Cys Gly Gln Glu Leu	
163 168 173 178	
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Glu Glu Gly Glu Gly Ser Arg Leu Gly Ala Ala Met Cys Gly Arg Cys	
179 184 189 194	
atg cga gga gag gct gga ggg ggt gcc agt ggg ggg ccc cag ggc ccc	679
Met Arg Gly Glu Ala Gly Gly Gly Ala Ser Gly Gly Pro Gln Gly Pro	
195 200 205 210	
agt gac aaa ggc ttt gcc tgt agc ctc tgc ccc ttt gcc act cac tat	727
Ser Asp Lys Gly Phe Ala Cys Ser Leu Cys Pro Phe Ala Thr His Tyr	
211 216 221 226	
ccc aac cac ctg gcc cgg cac atg aag aca cac agt ggt gag aag ccc	775
Pro Asn His Leu Ala Arg His Met Lys Thr His Ser Gly Glu Lys Pro	
227 232 237 242	
ttc cgc tgc gcc cgc tgt cct tat gcc tct gct cat ctg gat aac ctg	823
Phe Arg Cys Ala Arg Cys Pro Tyr Ala Ser Ala His Leu Asp Asn Leu	
243 248 253 258	
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Lys Arg His Gln Arg Val His Thr Gly Glu Lys Pro Tyr Lys Cys Pro	
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Leu Cys Pro Tyr Ala Cys Gly Asn Leu Ala Asn Leu Lys Arg His Gly	
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Arg Ile His Ser Gly Asp Lys Pro Phe Arg Cys Ser Leu Cys Asn Tyr	
291 296 301 306	
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Ser Cys Asn Gln Ser Met Asn Leu Lys Arg His Met Leu Arg His Thr	
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ggc gag aag cct tcc gct gtg cca cct gcg cct ata cca cgg gcc act	1063
Gly Glu Lys Pro Ser Ala Val Pro Pro Ala Pro Ile Pro Arg Ala Thr	
323 328 333 338	
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Gly Thr Thr Thr Ser Ala Thr Arg Arg Cys Met Ala Thr Val Gly Gln  
 339 344 349 354

gag ggc ctg gtc tct ctg cct ctg agg gct ggg ccc cac ctc ata gcc 1159  
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 355 360 365 370

cac cct ctg ttt tga gctctcgggg cccaccagcc ctggggactg ctggcagccg 1214  
 His Pro Leu Phe \*  
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 Ala Ala Thr Ser Gly Thr Asp Glu Pro Val Ser Gly Glu Leu Val Ser  
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gtg gca cat gcg ctt tct ctc cca gca gag tcg tat ggc aac gat cct 271  
 Val Ala His Ala Leu Ser Leu Pro Ala Glu Ser Tyr Gly Asn Asp Pro  
 18 23 28 33

gac att gag atg gct tgg gcc atg aga gca atg cag cat gct gaa gtc 319  
 Asp Ile Glu Met Ala Trp Ala Met Arg Ala Met Gln His Ala Glu Val  
 34 39 44 49

tat tac aag ctg att tca tca gtt gac cca cag ttc ctg aaa ctc acc 367



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gac gta cag aaa ggc aaa tat tgg gat act cca tta cat gct gct gct	698
Asp Val Gln Lys Gly Lys Tyr Trp Asp Thr Pro Leu His Ala Ala Ala	
173 178 183 188	
caa caa tcc agc aca gaa att gta aac tta ctg cta gaa ttt gga gca	746
Gln Gln Ser Ser Thr Glu Ile Val Asn Leu Leu Leu Glu Phe Gly Ala	
189 194 199 204	
gat atc aat gcc aaa aat aca gag ctt ctg cga cct ata gat gta gct	794
Asp Ile Asn Ala Lys Asn Thr Glu Leu Leu Arg Pro Ile Asp Val Ala	
205 210 215 220	
acg tct agc agt atg gtg gaa aga ata ttg ctt caa cat gaa gct acc	842
Thr Ser Ser Ser Met Val Glu Arg Ile Leu Leu Gln His Glu Ala Thr	
221 226 231 236	
cca agc tct ctt tac caa ctt tgc cga ctc tgt atc cga agc tac ata	890
Pro Ser Ser Leu Tyr Gln Leu Cys Arg Leu Cys Ile Arg Ser Tyr Ile	
237 242 247 252	
gga aaa cca aga ttg cac ctt atc cca caa ctc cag ctg cca acg tta	938
Gly Lys Pro Arg Leu His Leu Ile Pro Gln Leu Gln Leu Pro Thr Leu	
253 258 263 268	
ctg aag aat ttc tta cag tat cga taa aacag taaagtaatt ctaaatacct	990
Leu Lys Asn Phe Leu Gln Tyr Arg *	
269 274	
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gataggataa aagtgagtgt gagatcacc agggaagcag taaaatatca attttcattt	1110
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Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro Pro Glu Leu Leu Ala	
166 171 176 181	
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Val Met Thr Ala Met Gly Asn Ala Leu Ala Asn Ser Val Trp Glu Gly	
182 187 192 197	
gcc ttg ggt ggc tac tcc aag cca ggg cct gat gcc tgc aga gag gag	1158
Ala Leu Gly Gly Tyr Ser Lys Pro Gly Pro Asp Ala Cys Arg Glu Glu	
198 203 208 213	
aag gaa cgc tgg ata cgg gcc aag tat gaa cag aag ctc ttc ctg gcc	1206
Lys Glu Arg Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu Phe Leu Ala	
214 219 224 229	
cca ctg cca agc tca gat gtg cca ctg ggg cag cag ctg ctc cgg gcc	1254
Pro Leu Pro Ser Ser Asp Val Pro Leu Gly Gln Gln Leu Leu Arg Ala	
230 235 240 245	
gtg gtg gaa gat gac ctg cgg ctg ttg gtg atg ctc ctg gca cat ggc	1302
Val Val Glu Asp Asp Leu Arg Leu Leu Val Met Leu Leu Ala His Gly	
246 251 256 261	
tcc aaa gag gag gtg aat gag acc tat ggg gac ggg gac ggg cgg acg	1350
Ser Lys Glu Glu Val Asn Glu Thr Tyr Gly Asp Gly Asp Gly Arg Thr	
262 267 272 277	
gct cta cat ctc tcc agt gcc atg gcc aac gtt gtc ttc acg cag ctg	1398
Ala Leu His Leu Ser Ser Ala Met Ala Asn Val Val Phe Thr Gln Leu	
278 283 288 293	
ctc atc tgg tac ggg gtg gac gtg agg agc cgg gac gcc cgg ggc ctg	1446
Leu Ile Trp Tyr Gly Val Asp Val Arg Ser Arg Asp Ala Arg Gly Leu	
294 299 304 309	
act cca ctg gca tat gct cgc cgg gcc ggc agc cag gag tgt gca gac	1494
Thr Pro Leu Ala Tyr Ala Arg Arg Ala Gly Ser Gln Glu Cys Ala Asp	
310 315 320 325	
atc ttg atc cag cat ggc tgc cct ggg gag ggc tgt ggc tta gcg cct	1542
Ile Leu Ile Gln His Gly Cys Pro Gly Glu Gly Cys Gly Leu Ala Pro	
326 331 336 341	
acc ccc aac aga gag cct gcc aat ggc acc aac ccc tct gct gag ctg	1590
Thr Pro Asn Arg Glu Pro Ala Asn Gly Thr Asn Pro Ser Ala Glu Leu	
342 347 352 357	
cac cgt agt cct agc ctc cta taa ggcccaggaa gagggcagag gggccagaag	1644
His Arg Ser Pro Ser Leu Leu *	
358 363	
gactccatgg cccaaagacc ctctccctg caggcactgt gggaacagac acagagatgg	1704
agaagcaggg acatgctgag aggacgaagc caaggaaatt agggaggaga gtcaaaggga	1764
tcaaggagag ttggggattt gagctgcagc agagagggat gagggattta gccctctgcc	1824

ctaaggtgcc attgaaaagg gacaggaccc ttcggaggtg cctgtgagga gaggggagca 1884  
ggacctctcc ctctccaga tccctgcctc ctagtgccag cccctcacac gccttcatcc 1944  
tgaaacagga agaggacggc accaagttgg ggggtgctgga tgaaagagac gaggggtgat 2004  
ctgtgagtcc catgtaaact ttgtacattg gaatatattat gtttgtgtac atatttgatg 2064  
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Met Arg Ala  
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gct gtg aca cgg gag cag cgg agg cac ctc ctg gag acc ttt ttc agg 104  
Ala Val Thr Arg Glu Gln Arg Arg His Leu Leu Glu Thr Phe Phe Arg  
4 9 14 19

cac ctt ttc tcc cag gtg ctg gac atc aac cag gcc gac gca ggg acc 152  
His Leu Phe Ser Gln Val Leu Asp Ile Asn Gln Ala Asp Ala Gly Thr  
20 25 30 35

ctg ccc ctg gac tcc tcc cag aag gtg cgg gag gcc ctg acc tgt gag 200  
Leu Pro Leu Asp Ser Ser Gln Lys Val Arg Glu Ala Leu Thr Cys Glu  
36 41 46 51

ctg agc agg gcc gag ttt gcc gag tcc ctg ggc ctc aag ccc cag gac 248  
Leu Ser Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp  
52 57 62 67

atg ttt gtg gag tcc atg ttc tct ctg gct gac aag gat ggc aat ggc 296  
Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly  
68 73 78 83

tac ctg tcc ttc cga gag ttc ctg gac atc ctg gtg gtc ttc atg aaa 344  
Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys  
84 89 94 99

ggc tct cct gag gaa aag tct cgc ctt atg ttc cgc atg tac gac ttt 392  
Gly Ser Pro Glu Glu Lys Ser Arg Leu Met, Phe Arg Met Tyr Asp Phe  
100 105 110 115

gat ggg aat ggc ctc att tcc aag gat gag ttc atc agg atg ctg aga 440  
Asp Gly Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu Arg

116	121	126	131	
tcc ttc atc gag atc	tcc aac aac tgc ctg	tcc aag gcc cag ctg	gct	488
Ser Phe Ile Glu Ile	Ser Asn Asn Cys Leu	Ser Lys Ala Gln Leu	Ala	
132	137	142	147	
gag gtg gtg gag tcc	atg ttc cgg gag tcg	gga ttc cag gac aag	gag	536
Glu Val Val Glu Ser	Met Phe Arg Glu Ser	Gly Phe Gln Asp Lys	Glu	
148	153	158	163	
gaa ctg aca tgg gaa	gat ttt cac ttc atg	ctg cgg gac cac aat	agc	584
Glu Leu Thr Trp Glu	Asp Phe His Phe Met	Leu Arg Asp His Asn	Ser	
164	169	174	179	
gag ctc cgc ttc acg	cag ctc tgt gtc aaa	ggg gtg gag gtg cct	gaa	632
Glu Leu Arg Phe Thr	Gln Leu Cys Val Lys	Gly Val Glu Val Pro	Glu	
180	185	190	195	
gtc atc aag gac ctc	tgc cgg cga gcc tcc	tac atc agc cag gat	atg	680
Val Ile Lys Asp Leu	Cys Arg Arg Ala Ser	Tyr Ile Ser Gln Asp	Met	
196	201	206	211	
atc tgt ccc tct ccc	aga gtg agt gcc cgc	tgt tcc cgc agc gac	att	728
Ile Cys Pro Ser Pro	Arg Val Ser Ala Arg	Cys Ser Arg Ser Asp	Ile	
212	217	222	227	
gag act gag ttg aca	cct cag aga ctg cag	tgc ccc atg gac aca	gac	776
Glu Thr Glu Leu Thr	Pro Gln Arg Leu Gln	Cys Pro Met Asp Thr	Asp	
228	233	238	243	
cct ccc cag gag att	cgg cgg agg ttt ggc	aag aag gta acg tca	ttc	824
Pro Pro Gln Glu Ile	Arg Arg Arg Phe Gly	Lys Lys Val Thr Ser	Phe	
244	249	254	259	
cag ccc ttg ctg ttc	act gag gcg cac cga	gag aag ttc caa cgc	agc	872
Gln Pro Leu Leu Phe	Thr Glu Ala His Arg	Glu Lys Phe Gln Arg	Ser	
260	265	270	275	
tgt ctc cac cag acg	gtg caa cag ttc aag	cgc ttc att gag aac	tac	920
Cys Leu His Gln Thr	Val Gln Gln Phe Lys	Arg Phe Ile Glu Asn	Tyr	
276	281	286	291	
cgg cgc cac atc ggc	tgc gtg gcc gtg ttc	tac gcc atc gct ggg	ggg	968
Arg Arg His Ile Gly	Cys Val Ala Val Phe	Tyr Ala Ile Ala Gly	Gly	
292	297	302	307	
ctt ttc ctg gag agg	gcc tac tac tac gcc	ttt gcc gca cat cac	acg	1016
Leu Phe Leu Glu Arg	Ala Tyr Tyr Tyr Ala	Phe Ala Ala His His	Thr	
308	313	318	323	
ggc atc aca gac acc	acc cgc gtg gga atc	atc ctg tcg cgg ggc	aca	1064
Gly Ile Thr Asp Thr	Thr Arg Val Gly Ile	Ile Leu Ser Arg Gly	Thr	
324	329	334	339	
gca gcc agc atc tct	ttc atg ttc tcc tac	atc ttg ctc acc atg	tgc	1112
Ala Ala Ser Ile Ser	Phe Met Phe Ser Tyr	Ile Leu Leu Thr Met	Cys	
340	345	350	355	

cgc aac ctc atc acc ttc ctg cga gaa acc ttc ctc aac cgc tac gtg	1160
Arg Asn Leu Ile Thr Phe Leu Arg Glu Thr Phe Leu Asn Arg Tyr Val	
356 361 366 371	
ccc ttc gac gcc gcc gtg gac ttc cat cgc ctc att gcc tcc acc gcc	1208
Pro Phe Asp Ala Ala Val Asp Phe His Arg Leu Ile Ala Ser Thr Ala	
372 377 382 387	
atc gtc ctc aca ggc agg gcc tgg gtg tcc ctg gga ggc tct cca ggg	1256
Ile Val Leu Thr Gly Arg Ala Trp Val Ser Leu Gly Gly Ser Pro Gly	
388 393 398 403	
cct ccc gcc ccc gct gac ttc ccc tcg tat gag agc ccc cct ctc tgc	1304
Pro Pro Ala Pro Ala Asp Phe Pro Ser Tyr Glu Ser Pro Pro Leu Cys	
404 409 414 419	
tgg cac tta cct tta atg tcc ttc tcc atc agg atg gag ttg gcc tgg	1352
Trp His Leu Pro Leu Met Ser Phe Ser Ile Arg Met Glu Leu Ala Trp	
420 425 430 435	
gcc agg gtg tga	1364
Ala Arg Val *	
436	

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Met Ala Gly Ser Pro Leu Leu Trp Gly Pro Arg Ala	
1 5 10	
ggg ggc gtc ggc ctt ttg gtg ctg ctg ctg ctc ggc ctg ttt cgg ccg	156
Gly Gly Val Gly Leu Leu Val Leu Leu Leu Leu Gly Leu Phe Arg Pro	
13 18 23 28	
ccc ccc gcg ctc tgc gcg cgg ccg gta aag gag ccc cgc ggc cta agc	204
Pro Pro Ala Leu Cys Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser	
29 34 39 44	
gca gcg tct ccg ccc ttg gct gag act ggc gct cct cgc cgc ttc cgg	252
Ala Ala Ser Pro Pro Leu Ala Glu Thr Gly Ala Pro Arg Arg Phe Arg	
45 50 55 60	

cgg tca gtg ccc cga ggt gag gcg gcg ggg gcg gtg cag gag ctg gcg Arg Ser Val Pro Arg Gly Glu Ala Ala Gly Ala Val Gln Glu Leu Ala 61 66 71 76	300
cgg gcg ctg gcg cat ctg ctg gag gcc gaa cgt cag gag cgg gcg cgg Arg Ala Leu Ala His Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg 77 82 87 92	348
gcc gag gcg cag gag gct gag gat cag cag gcg cgc gtc ctg gcg cag Ala Glu Ala Gln Glu Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln 93 98 103 108	396
ctg ctg cgc gtc tgg ggc gcc ccc cgc aac tct gat ccg gct ctg ggc Leu Leu Arg Val Trp Gly Ala Pro Arg Asn Ser Asp Pro Ala Leu Gly 109 114 119 124	444
ctg gac gac gac ccc gac gcg cct gca gcg cag ctc gct cgc gct ctg Leu Asp Asp Asp Pro Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu 125 130 135 140	492
ctc cgc gcc cgc ctt gac cct gcc gcc cta gca gcc cag ctt gtc ccc Leu Arg Ala Arg Leu Asp Pro Ala Ala Leu Ala Ala Gln Leu Val Pro 141 146 151 156	540
gcg ccc gtc ccc gcc gcg gcg ctc cga ccc cgg ccc ccg gtc tac gac Ala Pro Val Pro Ala Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp 157 162 167 172	588
gac ggc ccc gcg ggc ccg gat gct gag gag gca ggc gac gag aca ccc Asp Gly Pro Ala Gly Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro 173 178 183 188	636
gac gtg gac ccc gag ctg ttg agg tac ttg ctg gga cgg att ctt gcg Asp Val Asp Pro Glu Leu Leu Arg Tyr Leu Leu Gly Arg Ile Leu Ala 189 194 199 204	684
gga agc gcg gac tcc gag ggg gtg gca gcc ccg cgc cgc ctc cgc cgt Gly Ser Ala Asp Ser Glu Gly Val Ala Ala Pro Arg Arg Leu Arg Arg 205 210 215 220	732
gcc gcc gac cac gat gtg ggc tct gag ctg ccc cct gag ggc gtg ctg Ala Ala Asp His Asp Val Gly Ser Glu Leu Pro Pro Glu Gly Val Leu 221 226 231 236	780
ggg gcg ctg ctg cgt gtg aaa cgc cta gag acc ccg gcg ccc cag gtg Gly Ala Leu Leu Arg Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val 237 242 247 252	828
cct gca cgc cgc ctc ttg cca ccc tga gcaact gcccgatcc cgtgcaccct Pro Ala Arg Arg Leu Leu Pro Pro * 253 258	880
gggacccaga agtgcccccg ccatcccgcc accaggactg ctccccgcca gcacgtccag	940
agcaacttac cccggccagc cagccctctc acccgaggat ccctaccccc tggccccaca	1000
ataaacatga tctgaagcaa aaaaaaaaaa	1030

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<220>  
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 Met Ala Gly Ser Pro Leu Leu Trp Gly Pro Arg Ala  
 1 5 10  
 ggg ggc gtc ggc ctt ttg gtg ctg ctg ctg ctc ggc ctg ttt cgg ccg 156  
 Gly Gly Val Gly Leu Leu Val Leu Leu Leu Leu Gly Leu Phe Arg Pro  
 13 18 23 28  
 ccc ccc gcg ctc tgc gcg cgg ccg gta aag gag ccc cgc ggc cta agc 204  
 Pro Pro Ala Leu Cys Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser  
 29 34 39 44  
 gca gcg tct ccg ccc ttg gct gag act ggc gct cct cgc cgc ttc cgg 252  
 Ala Ala Ser Pro Pro Leu Ala Glu Thr Gly Ala Pro Arg Arg Phe Arg  
 45 50 55 60  
 cgg tca gtg ccc cga ggt gag gcg gcg ggg gcg gtg cag gag ctg gcg 300  
 Arg Ser Val Pro Arg Gly Glu Ala Ala Gly Ala Val Gln Glu Leu Ala  
 61 66 71 76  
 cgg gcg ctg gcg cat ctg ctg gag gcc gaa cgt cag gag cgg gcg cgg 348  
 Arg Ala Leu Ala His Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg  
 77 82 87 92  
 gcc gag gcg cag gag gct gag gat cag cag gcg cgc gtc ctg gcg cag 396  
 Ala Glu Ala Gln Glu Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln  
 93 98 103 108  
 ctg ctg cgc gtc tgg ggc gcc ccc cgc aac tct gat ccg gct ctg ggc 444  
 Leu Leu Arg Val Trp Gly Ala Pro Arg Asn Ser Asp Pro Ala Leu Gly  
 109 114 119 124  
 ctg gac gac gac ccc gac gcg cct gca gcg cag ctc gct cgc gct ctg 492  
 Leu Asp Asp Asp Pro Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu  
 125 130 135 140  
 ctc cgc gcc cgc ctt gac cct gcc gcc cta gca gcc cag ctt gtc ccc 540  
 Leu Arg Ala Arg Leu Asp Pro Ala Ala Leu Ala Ala Gln Leu Val Pro  
 141 146 151 156  
 gcg ccc gtc ccc gcc gcg gcg ctc cga ccc cgg ccc ccg gtc tac gac 588

Ala Pro Val Pro Ala Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp	
157 162 167 172	
gac ggc ccc gcg ggc ccg gat gct gag gag gca ggc gac gag aca ccc	636
Asp Gly Pro Ala Gly Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro	
173 178 183 188	
gac gtg gac ccc gag ctg ttg agg tac ttg ctg ggg gcg ctg ctg cgt	684
Asp Val Asp Pro Glu Leu Leu Arg Tyr Leu Leu Gly Ala Leu Leu Arg	
189 194 199 204	
gtg aaa cgc cta gag acc ccg gcg ccc cag gtg cct gca cgc cgc ctc	732
Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val Pro Ala Arg Arg Leu	
205 210 215 220	
ttg cca ccc tga gca ctgccccgat cccgtgcacc ctgggaccca gaagtgcccc	787
Leu Pro Pro *	
221	
cgccatccccg ccaccaggac tgctccccgc cagcacgtcc agagcaactt accccggcca	847
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cagctggagg agcagctgga ggcacgagag gccagcgtgc gcaggctcgc agagcacgtg	180
cagagcctct gtgacgagcg ggacctctc agacagcggc tccaggagct gacagagcgc	240
gtggccacgt ccgacgagga tgtggctgag ctccgggaaa agctgaggag aagagaggct	300
gacaaccaga gcctggagca ctccctaccag agggctctcca gccagctgca gacg	357
Met	
1	
cac act ctg ctg aga gag aag gag gaa gag ctg gag cgc att aag gaa	405
His Thr Leu Leu Arg Glu Lys Glu Glu Glu Leu Glu Arg Ile Lys Glu	
2 7 12 17	
gca cat gag aag gtt ctg gag aag aag gag cag gac ctc aat gag gct	453

Ala His Glu Lys Val Leu Glu Lys Lys Glu Gln Asp Leu Asn Glu Ala	
18 23 28 33	
ttg gtt aaa atg gtt gcc ttg ggg agc agc tta gag gaa aca gaa att	501
Leu Val Lys Met Val Ala Leu Gly Ser Ser Leu Glu Glu Thr Glu Ile	
34 39 44 49	
aag ctc cag gca aaa gaa gag att tta agg aaa ttt gca agt gaa tct	549
Lys Leu Gln Ala Lys Glu Glu Ile Leu Arg Lys Phe Ala Ser Glu Ser	
50 55 60 65	
cca aag gac atg gaa gag cca cgg agt acc tct gaa gag aca caa agg	597
Pro Lys Asp Met Glu Glu Pro Arg Ser Thr Ser Glu Glu Thr Gln Arg	
66 71 76 81	
gat ggc tct ttg ctc cca ggt caa cca gtc caa gcc tct agg gca cct	645
Asp Gly Ser Leu Leu Pro Gly Gln Pro Val Gln Ala Ser Arg Ala Pro	
82 87 92 97	
gta ggc ctc cca cac tca agg ctc gag gat gag gac gag gac ctg ggg	693
Val Gly Leu Pro His Ser Arg Leu Glu Asp Glu Asp Glu Asp Leu Gly	
98 103 108 113	
gct cct ccg ggg gaa gag tac ggt gat ggc agc ccc agt agg gaa gac	741
Ala Pro Pro Gly Glu Glu Tyr Gly Asp Gly Ser Pro Ser Arg Glu Asp	
114 119 124 129	
agc atg gtg ccc cca aag tca gtg gaa gtg ctt gac agg gag ggc cat	789
Ser Met Val Pro Pro Lys Ser Val Glu Val Leu Asp Arg Glu Gly His	
130 135 140 145	
cag cag ggc aca gcc aaa ctc gac caa ggg gca cct ggt gtt aaa agg	837
Gln Gln Gly Thr Ala Lys Leu Asp Gln Gly Ala Pro Gly Val Lys Arg	
146 151 156 161	
caa aga atc cgg ttc tcc aca atc cag tgc caa aga tac att cac ccc	885
Gln Arg Ile Arg Phe Ser Thr Ile Gln Cys Gln Arg Tyr Ile His Pro	
162 167 172 177	
gaa ggg tct gag aag acc tgg acc agc agc aca tct tcc gac acc agc	933
Glu Gly Ser Glu Lys Thr Trp Thr Ser Ser Thr Ser Ser Asp Thr Ser	
178 183 188 193	
cag gac cgg tca ccc tcg gaa gaa agc atg tcc tca gag cct gca ccc	981
Gln Asp Arg Ser Pro Ser Glu Glu Ser Met Ser Ser Glu Pro Ala Pro	
194 199 204 209	
agt gta ctg cct gca act ggc gac tct gac acg tac ctc tcc atc atc	1029
Ser Val Leu Pro Ala Thr Gly Asp Ser Asp Thr Tyr Leu Ser Ile Ile	
210 215 220 225	
cac tcc ctg gag acc aag ctc tac gtc aca gag gaa aag ctc aaa gac	1077
His Ser Leu Glu Thr Lys Leu Tyr Val Thr Glu Glu Lys Leu Lys Asp	
226 231 236 241	
gtg acc gtg agg ctg gag agc cag cag ggt cag agc cgt gag gca ctg	1125
Val Thr Val Arg Leu Glu Ser Gln Gln Gly Gln Ser Arg Glu Ala Leu	



242	247	252	257	
ctc gca ctg cac cac Leu Ala Leu His His 258	cag tgg gcg ggc acc Gln Trp Ala Gly Thr 263	gag gcc cag ctg cgt Glu Ala Gln Leu Arg 268	gag Glu 273	1173
cag ctc cgc gcc agc Gln Leu Arg Ala Ser 274	ctg ctc cag gtt ggc Leu Leu Gln Val Gly 279	gca ctg gcc tcc cag Ala Leu Ala Ser Gln 284	ctg Leu 289	1221
gag cag gag agg cag Glu Gln Glu Arg Gln 290	gag agg gcc agg agg Glu Arg Ala Arg Arg 295	gtt gaa ggg cat gtt Val Glu Gly His Val 300	gga Gly 305	1269
gag ctt ggg gac ttc Glu Leu Gly Asp Phe 306	cag gtc aag aat agt Gln Val Lys Asn Ser 311	cag gcc ctg atg tgc Gln Ala Leu Met Cys 316	ctg Leu 321	1317
gaa aat tgc cga gaa Glu Asn Cys Arg Glu 322	caa ctg aga tct ctg Gln Leu Arg Ser Leu 327	cct agg gcc agc cag Pro Arg Ala Ser Gln 332	gag Glu 337	1365
gat gag cag gac gca Asp Glu Gln Asp Ala 338	cgc gca gcc tcc ctg Arg Ala Ala Ser Leu 343	gcc agt gtg gag agt Ala Ser Val Glu Ser 348	gca Ala 353	1413
ctc gtc agc gcc atc Leu Val Ser Ala Ile 354	caa gcc ctg cag cac Gln Ala Leu Gln His 359	tgg ccg gcc cca gcc Trp Pro Ala Pro Ala 364	cat His 369	1461
ggc ggg gcc cgt gca Gly Gly Ala Arg Ala 370	cag ctg gag aca ggt Gln Leu Glu Thr Gly 375	ggc acc gag gag aat Gly Thr Glu Glu Asn 380	ggg Gly 385	1509
aag cct gcc tcc ctg Lys Pro Ala Ser Leu 386	cag cag tgc tcc cag Gln Gln Cys Ser Gln 391	tct gag ttg aca gag Ser Glu Leu Thr Glu 396	cag Gln 401	1557
gag cag gtg agg ctt Glu Gln Val Arg Leu 402	ctt tct gac cag att Leu Ser Asp Gln Ile 407	gct ctg gag gcc tcg Ala Leu Glu Ala Ser 412	ctg Leu 417	1605
atc agc cag ata gca Ile Ser Gln Ile Ala 418	gat tcc ctg aag aac Asp Ser Leu Lys Asn 423	aca aca tca gat gtc Thr Thr Ser Asp Val 428	tcc Ser 433	1653
cga atg ctc cat gag Arg Met Leu His Glu 434	att tct tgg tca gga Ile Ser Trp Ser Gly 439	cag cca ccg atg gaa Gln Pro Pro Met Glu 444	tct Ser 449	1701
gct ggg gcc ccc gta Ala Gly Ala Pro Val 450	gac acc tgg gcc agg Asp Thr Trp Ala Arg 455	aag gtc cta gtg gat Lys Val Leu Val Asp 460	ggt Gly 465	1749
gag ttc tgg agc cag Glu Phe Trp Ser Gln 466	gtt gag tct ctg agg Val Glu Ser Leu Arg 471	aag cac ttg ggg aca Lys His Leu Gly Thr 476	ctg Leu 481	1797

gga gga gag gca gtc ggt gcc tca gga gac ggg cag caa agc atc cca	1845
Gly Gly Glu Ala Val Gly Ala Ser Gly Asp Gly Gln Gln Ser Ile Pro	
482 487 492 497	
cag ggc ctg gcc ccc atc ctg gcc aat gcc aca tgg gtc agg gca gag	1893
Gln Gly Leu Ala Pro Ile Leu Ala Asn Ala Thr Trp Val Arg Ala Glu	
498 503 508 513	
ctc agc ttt gcc aca cag tca gtg agg gag tcg ttc cac cgc agg cta	1941
Leu Ser Phe Ala Thr Gln Ser Val Arg Glu Ser Phe His Arg Arg Leu	
514 519 524 529	
cag agc atc cag gag acc ctg cgg ggc acc cag acg gcc ctg cgg cag	1989
Gln Ser Ile Gln Glu Thr Leu Arg Gly Thr Gln Thr Ala Leu Arg Gln	
530 535 540 545	
cac aaa tgc ctg ctg agg gaa atc ctg gga gcc tac caa acc cca gac	2037
His Lys Cys Leu Leu Arg Glu Ile Leu Gly Ala Tyr Gln Thr Pro Asp	
546 551 556 561	
ttt gaa aga gtg atg cag cag gtc ttg gaa gcc ctc agg ctt cca gcg	2085
Phe Glu Arg Val Met Gln Gln Val Leu Glu Ala Leu Arg Leu Pro Ala	
562 567 572 577	
ggc cat gaa gat ggt gtt cag ctg tcc tgg gac ctg agc ccc tta gga	2133
Gly His Glu Asp Gly Val Gln Leu Ser Trp Asp Leu Ser Pro Leu Gly	
578 583 588 593	
gaa gtc ctg ggc cga gac tca gac agc tct cag gag ccc ttc gat gtg	2181
Glu Val Leu Gly Arg Asp Ser Asp Ser Ser Gln Glu Pro Phe Asp Val	
594 599 604 609	
tct gac cag agc cct ggg gcc ttt gtt gct att cag gag gag ctt gcc	2229
Ser Asp Gln Ser Pro Gly Ala Phe Val Ala Ile Gln Glu Glu Leu Ala	
610 615 620 625	
cag cag ctg aag gag aag gcc agc ctc tta gag gag ata gcg gct gcc	2277
Gln Gln Leu Lys Glu Lys Ala Ser Leu Leu Glu Glu Ile Ala Ala Ala	
626 631 636 641	
tta cca tct ctg cca cct gtg gaa tcg ctg aga gat tgc cag aag ctt	2325
Leu Pro Ser Leu Pro Pro Val Glu Ser Leu Arg Asp Cys Gln Lys Leu	
642 647 652 657	
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Gly Gln Tyr Ser Ser Leu Leu Val Gln Asp Ala Ile Ile Gln Ala Gln	
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Val Cys Tyr Ala Ser Cys Arg Ile Arg Leu Glu Tyr Glu Lys Glu Leu	
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Gln Leu Cys Lys Glu Ser Trp Gln Thr Arg Glu Pro Ser Cys Ser Glu	
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Gln Ala Gln Ala Ala Arg Ala Leu Arg Glu Glu Tyr Glu Glu Leu Leu	
722 727 732 737	
cgc aag cag aag agc gag tac ctg gat gtg atc gcc att gtt gaa agg	2613
Arg Lys Gln Lys Ser Glu Tyr Leu Asp Val Ile Ala Ile Val Glu Arg	
738 743 748 753	
gag aat gca gag ctc aag gcc aag gcc gcc cag cta gac cat cag cag	2661
Glu Asn Ala Glu Leu Lys Ala Lys Ala Ala Gln Leu Asp His Gln Gln	
754 759 764 769	
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Gln Cys Leu Glu Asp Ala Glu Ser Lys His Ser Met Ser Met Phe Thr	
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Leu Arg Gly Arg Tyr Glu Lys Glu Ile Arg Cys Val Val Glu Gln Leu	
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acc agg acc gag agc aca ctg cag gct gag cgc agc cgg gtc ctg agc	2805
Thr Arg Thr Glu Ser Thr Leu Gln Ala Glu Arg Ser Arg Val Leu Ser	
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Gln Leu Asp Ala Ser Val Arg Asp Arg Gln Asp Met Glu Arg His His	
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Gly Glu Gln Ile Gln Thr Leu Glu Asp Arg Phe Gln Leu Lys Val Arg	
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Glu Leu Gln Thr Ile His Glu Glu Glu Leu Arg Thr Leu Gln Glu His	
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Tyr Ser Gln Ser Leu Arg Cys Leu Gln Asp Thr Leu Cys Leu His Gln	
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Gln Lys Cys Leu Glu Asn Ala His Leu Ala Gln Ala Leu Glu Ala Glu	
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Glu Glu Leu Tyr Leu Asp Ala Asn Gln Ile Glu Glu Leu Pro Lys Gln				
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Leu Thr Thr Leu Pro Ala Ser Ile Ala Asn Leu Ile Asn Leu Arg Glu				
81	86	91	96	
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Asn Cys Lys Val Leu Thr Ile Val Glu Ala Ser Val Asn Pro Ile Ser				
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Lys Leu Pro Asp Gly Phe Ser Gln Leu Leu Asn Leu Thr Gln Leu Tyr				
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Thr Lys Leu Gln Ile Leu Glu Leu Arg Glu Asn Gln Leu Lys Met Leu				
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Pro Lys Thr Met Asn Arg Leu Thr Gln Leu Glu Arg Leu Asp Leu Gly				
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Phe Ile Gly Ser Leu Lys Gln Leu Thr Tyr Leu Asp Val Ser Lys Asn				
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Gly Ser Leu Lys Asn Ile Thr Thr Leu Lys Ile Asp Glu Asn Gln Leu	
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Asp Glu Asp Lys Asp Glu Arg Glu Ala Pro Pro Arg Glu Gly Asn Leu	
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 cctgcgaccc ccacagcggg cactgctgt gcaaggcggg cgtgactggg cggcgctgtg 420  
 accgctgcca ggaggacat tttggtttca atggctgcgg gggctgccgc ccgtgtgctt 480  
 gtggaccggc cgccgagggc tccgagtgc accccagag cggacagtgc cactgccgac 540  
 cagggacc atg gga ccc cag tgc cgc gag tgt gcc cct ggc tac tgg ggg 590  
 Met Gly Pro Gln Cys Arg Glu Cys Ala Pro Gly Tyr Trp Gly  
 1 5 10  
 ctc cct gag cag ggc tgc agg cgc tgc cag tgc cct ggg ggc cgc tgt 638

Leu	Pro	Glu	Gln	Gly	Cys	Arg	Arg	Cys	Gln	Cys	Pro	Gly	Gly	Arg	Cys		
15					20					25					30		
gac	cct	cac	acg	ggc	cgc	tgc	aac	tgc	ccc	ccg	ggg	ctc	agc	ggg	gag		686
Asp	Pro	His	Thr	Gly	Arg	Cys	Asn	Cys	Pro	Pro	Gly	Leu	Ser	Gly	Glu		
31					36					41					46		
cgc	tgc	gac	acc	tgc	agc	cag	cag	cat	cag	gtg	cct	gtt	cca	ggc	ggg		734
Arg	Cys	Asp	Thr	Cys	Ser	Gln	Gln	His	Gln	Val	Pro	Val	Pro	Gly	Gly		
47					52					57					62		
cct	gtg	ggc	cac	agc	atc	cac	tgt	gaa	gtg	tgt	gac	cac	tgt	gtg	gtc		782
Pro	Val	Gly	His	Ser	Ile	His	Cys	Glu	Val	Cys	Asp	His	Cys	Val	Val		
63					68					73					78		
ctg	ctc	ctg	gat	gac	ctg	gaa	cgg	gcc	ggc	gcc	ctc	ctc	ccc	gcc	att		830
Leu	Leu	Leu	Asp	Asp	Leu	Glu	Arg	Ala	Gly	Ala	Leu	Leu	Pro	Ala	Ile		
79					84					89					94		
cac	gag	caa	ctg	cgt	ggc	atc	aac	gcc	agc	tcc	atg	gcc	tgg	gcc	cgt		878
His	Glu	Gln	Leu	Arg	Gly	Ile	Asn	Ala	Ser	Ser	Met	Ala	Trp	Ala	Arg		
95					100					105					110		
ctg	cac	agg	ctg	aac	gcc	tcc	atc	gct	gac	ctg	cag	agc	cag	ctc	cgg		926
Leu	His	Arg	Leu	Asn	Ala	Ser	Ile	Ala	Asp	Leu	Gln	Ser	Gln	Leu	Arg		
111					116					121					126		
agc	ccc	ctg	ggc	ccc	cgc	cat	gag	acg	gca	cag	cag	ctg	gag	gtg	ctg		974
Ser	Pro	Leu	Gly	Pro	Arg	His	Glu	Thr	Ala	Gln	Gln	Leu	Glu	Val	Leu		
127					132					137					142		
gag	cag	cag	agc	aca	agc	ctc	ggg	cag	gac	gca	cgg	cgg	cta	ggc	ggc		1022
Glu	Gln	Gln	Ser	Thr	Ser	Leu	Gly	Gln	Asp	Ala	Arg	Arg	Leu	Gly	Gly		
143					148					153					158		
cag	gcc	gtg	ggg	acc	cga	gac	cag	gcg	agc	caa	ttg	ctg	gcc	ggc	acc		1070
Gln	Ala	Val	Gly	Thr	Arg	Asp	Gln	Ala	Ser	Gln	Leu	Leu	Ala	Gly	Thr		
159					164					169					174		
gag	gcc	aca	ctg	ggc	cat	gcg	aag	acg	ctg	ttg	gcg	gcc	atc	cgg	gct		1118
Glu	Ala	Thr	Leu	Gly	His	Ala	Lys	Thr	Leu	Leu	Ala	Ala	Ile	Arg	Ala		
175					180					185					190		
gtg	gac	cgc	acc	ctg	agc	gag	ctc	atg	tcc	cag	acg	ggc	cac	ctg	ggg		1166
Val	Asp	Arg	Thr	Leu	Ser	Glu	Leu	Met	Ser	Gln	Thr	Gly	His	Leu	Gly		
191					196					201					206		
ctg	gcc	aac	ggc	tcg	gct	cca	tca	ggt	gag	cag	ctg	ctc	cgg	aca	ctg		1214
Leu	Ala	Asn	Ala	Ser	Ala	Pro	Ser	Gly	Glu	Gln	Leu	Leu	Arg	Thr	Leu		
207					212					217					222		
gcc	gag	gtg	gag	cgg	ctg	ctc	tgg	gag	atg	cgg	gcc	cgg	gac	ctg	ggg		1262
Ala	Glu	Val	Glu	Arg	Leu	Leu	Trp	Glu	Met	Arg	Ala	Arg	Asp	Leu	Gly		
223					228					233					238		
gcc	ccg	cag	gca	gca	gct	gag	gct	gag	ttg	gct	gca	gca	cag	aga	ttg		1310
Ala	Pro	Gln	Ala	Ala	Ala	Glu	Ala	Glu	Leu	Ala	Ala	Ala	Gln	Arg	Leu		

239	244	249	254	
ctg gcc cgg gtg cag gag cag ctg agc agc ctc tgg gag gag aac cag				1358
Leu Ala Arg Val Gln Glu Gln Leu Ser Ser Leu Trp Glu Glu Asn Gln				
255	260	265	270	
gca ctg gcc aca caa acc cgc gac cgg ctg gcc cag cac gag gcc ggc				1406
Ala Leu Ala Thr Gln Thr Arg Asp Arg Leu Ala Gln His Glu Ala Gly				
271	276	281	286	
ctc atg gac ctg cga gag gct ttg aac cgg gca gtg gac gcc aca cgg				1454
Leu Met Asp Leu Arg Glu Ala Leu Asn Arg Ala Val Asp Ala Thr Arg				
287	292	297	302	
gag gcc cag gag ctc aac agc cgc aac cag gag cgc ctg gag gaa gcc				1502
Glu Ala Gln Glu Leu Asn Ser Arg Asn Gln Glu Arg Leu Glu Glu Ala				
303	308	313	318	
ctg caa agg aag cag gag ctg tcc cgg gac aat gcc acc ctg cag gcc				1550
Leu Gln Arg Lys Gln Glu Leu Ser Arg Asp Asn Ala Thr Leu Gln Ala				
319	324	329	334	
act ctg cat gcg gct agg gac acc ctg gcc agc gtc ttc aga ttg ctg				1598
Thr Leu His Ala Ala Arg Asp Thr Leu Ala Ser Val Phe Arg Leu Leu				
335	340	345	350	
cac agc ctg gac cag gct aag gag gag ctg gag cgc ctc gcc gcc agc				1646
His Ser Leu Asp Gln Ala Lys Glu Glu Leu Glu Arg Leu Ala Ala Ser				
351	356	361	366	
ctg gac ggg gct cgg acc cca ctg ctg cag agg atg cag acc ttc tcc				1694
Leu Asp Gly Ala Arg Thr Pro Leu Leu Gln Arg Met Gln Thr Phe Ser				
367	372	377	382	
ccg gcg ggc agc aag ctg cgt cta gtg gag gcc gcc gag gcc cac gca				1742
Pro Ala Gly Ser Lys Leu Arg Leu Val Glu Ala Ala Glu Ala His Ala				
383	388	393	398	
cag cag ctg ggc cag ctg gca ctc aat ctg tcc agc atc atc ctg gac				1790
Gln Gln Leu Gly Gln Leu Ala Leu Asn Leu Ser Ser Ile Ile Leu Asp				
399	404	409	414	
gtc aac cag gac cgc ctc acc cag agg gcc atc gag gcc tcc aac gcc				1838
Val Asn Gln Asp Arg Leu Thr Gln Arg Ala Ile Glu Ala Ser Asn Ala				
415	420	425	430	
tac agc cgc atc ctg cag gcc gtg cag gct gcc gag gat gct gct ggc				1886
Tyr Ser Arg Ile Leu Gln Ala Val Gln Ala Ala Glu Asp Ala Ala Gly				
431	436	441	446	
cag gcc ctg cag cag gcg gac cac acg tgg gcg acg gtg gtg cgg cag				1934
Gln Ala Leu Gln Gln Ala Asp His Thr Trp Ala Thr Val Val Arg Gln				
447	452	457	462	
ggc ctg gtg gac cga gcc cag cag ctc ctg gcc aac agc act gca cta				1982
Gly Leu Val Asp Arg Ala Gln Gln Leu Leu Ala Asn Ser Thr Ala Leu				
463	468	473	478	

gaa gag gcc atg ctc cag gaa cag cag agg ctg ggc ctt gtg tgg gct	2030
Glu Glu Ala Met Leu Gln Glu Gln Gln Arg Leu Gly Leu Val Trp Ala	
479 484 489 494	
gcc ctc cag ggt gcc agg acc cag ctc cga gat gtc cgg gcc aag aag	2078
Ala Leu Gln Gly Ala Arg Thr Gln Leu Arg Asp Val Arg Ala Lys Lys	
495 500 505 510	
gac cag ctg gag gcg cac atc cag gcg gcg cag gcc atg ctt gcc atg	2126
Asp Gln Leu Glu Ala His Ile Gln Ala Ala Gln Ala Met Leu Ala Met	
511 516 521 526	
gac aca gac gag aca agc aag aag atc gca cat gcc aag gct gtg gct	2174
Asp Thr Asp Glu Thr Ser Lys Lys Ile Ala His Ala Lys Ala Val Ala	
527 532 537 542	
gct gaa gcc cag gac acc gcc acc cgt gtg cag tcc cag ctg cag gcc	2222
Ala Glu Ala Gln Asp Thr Ala Thr Arg Val Gln Ser Gln Leu Gln Ala	
543 548 553 558	
atg cag gag aat gtg gag cgg tgg cag ggc cag tac gag ggc ctg cgg	2270
Met Gln Glu Asn Val Glu Arg Trp Gln Gly Gln Tyr Glu Gly Leu Arg	
559 564 569 574	
ggc cag gac ctg ggc cag gca gtg ctt gac gca ggc cac tca gtg tcc	2318
Gly Gln Asp Leu Gly Gln Ala Val Leu Asp Ala Gly His Ser Val Ser	
575 580 585 590	
acc ctg gag aag acg ctg ccc cag ctg ctg gcc aag ctg agc atc ctg	2366
Thr Leu Glu Lys Thr Leu Pro Gln Leu Leu Ala Lys Leu Ser Ile Leu	
591 596 601 606	
gag aac cgt ggg gtg cac aac gcc agc ctg gcc ctg tcc gcc agc att	2414
Glu Asn Arg Gly Val His Asn Ala Ser Leu Ala Leu Ser Ala Ser Ile	
607 612 617 622	
ggc cgc gtg cga gag ctc att gcc cag gcc cgg ggg gct gcc agt aag	2462
Gly Arg Val Arg Glu Leu Ile Ala Gln Ala Arg Gly Ala Ala Ser Lys	
623 628 633 638	
gtc aag gtg ccc atg aag ttc aac ggg cgc tca ggg gtg cag ctg cgc	2510
Val Lys Val Pro Met Lys Phe Asn Gly Arg Ser Gly Val Gln Leu Arg	
639 644 649 654	
acc cca cgg gat ctt gcc gac ctt gct gcc tac act gcc ctc aag ttc	2558
Thr Pro Arg Asp Leu Ala Asp Leu Ala Ala Tyr Thr Ala Leu Lys Phe	
655 660 665 670	
tac ctg cag ggc cca gag cct gag cct ggg cag ggt acc gag gat cgc	2606
Tyr Leu Gln Gly Pro Glu Pro Glu Pro Gly Gln Gly Thr Glu Asp Arg	
671 676 681 686	
ttt gtg atg tac atg ggc agc cgc cag gcc act ggg gac tac atg ggt	2654
Phe Val Met Tyr Met Gly Ser Arg Gln Ala Thr Gly Asp Tyr Met Gly	
687 692 697 702	

gtg tct ctg cgt gac aag aag gtg cac tgg gtg tat cag ctg ggt gag Val Ser Leu Arg Asp Lys Lys Val His Trp Val Tyr Gln Leu Gly Glu 703 708 713 718	2702
gcg ggc cct gca gtc cta agc atc gat gag gac att ggg gag cag ttc Ala Gly Pro Ala Val Leu Ser Ile Asp Glu Asp Ile Gly Glu Gln Phe 719 724 729 734	2750
gca gct gtc agc ctg gac agg act ctc cag ttt ggc cac atg tcc gtc Ala Ala Val Ser Leu Asp Arg Thr Leu Gln Phe Gly His Met Ser Val 735 740 745 750	2798
aca gtg gag aga cag atg atc cag gaa acc aag ggt gac acg gtg gcc Thr Val Glu Arg Gln Met Ile Gln Glu Thr Lys Gly Asp Thr Val Ala 751 756 761 766	2846
cct ggg gca gag ggg ctg ctc aac ctg cgg cca gac gac ttc gtc ttc Pro Gly Ala Glu Gly Leu Leu Asn Leu Arg Pro Asp Asp Phe Val Phe 767 772 777 782	2894
tac gtc ggg ggg tac ccc agt acc ttc acg ccc cct ccc ctg ctt cgc Tyr Val Gly Gly Tyr Pro Ser Thr Phe Thr Pro Pro Pro Leu Leu Arg 783 788 793 798	2942
ttc ccc ggc tac cgg ggc tgc atc gag atg gac acg ctg aat gag gag Phe Pro Gly Tyr Arg Gly Cys Ile Glu Met Asp Thr Leu Asn Glu Glu 799 804 809 814	2990
gtg gtc agc ctc tac aac ttc gag agg acc ttc cag ctg gac acg gct Val Val Ser Leu Tyr Asn Phe Glu Arg Thr Phe Gln Leu Asp Thr Ala 815 820 825 830	3038
gtg gac agg cct tgt gcc cgc tcc aag tcg acc ggg gac ccg tgg ctc Val Asp Arg Pro Cys Ala Arg Ser Lys Ser Thr Gly Asp Pro Trp Leu 831 836 841 846	3086
acg gac ggc tcc tac ctg gac ggc acc ggc ttc gcc cgc atc agc ttc Thr Asp Gly Ser Tyr Leu Asp Gly Thr Gly Phe Ala Arg Ile Ser Phe 847 852 857 862	3134
gac agt cag atc agc acc acc aag cgc ttc gag cag gag ctg cgg ctc Asp Ser Gln Ile Ser Thr Thr Lys Arg Phe Glu Gln Glu Leu Arg Leu 863 868 873 878	3182
gtg tcc tac agc ggg gtg ctc ttc ttc ctg aag cag cag agc cag ttc Val Ser Tyr Ser Gly Val Leu Phe Phe Leu Lys Gln Gln Ser Gln Phe 879 884 889 894	3230
ctg tgc ttg gcc gtg caa gaa ggc agc ctc gtg ctg ttg tat gac ttt Leu Cys Leu Ala Val Gln Glu Gly Ser Leu Val Leu Leu Tyr Asp Phe 895 900 905 910	3278
ggg gct ggc ctg aaa aag gcc gtc cca ctg cag ccc cca ccg ccc ctg Gly Ala Gly Leu Lys Lys Ala Val Pro Leu Gln Pro Pro Pro Pro Leu 911 916 921 926	3326
acc tcg gcc agc aag gcg atc cag gtg ttc ctg ctg ggg ggc agc cgc	3374

Thr	Ser	Ala	Ser	Lys	Ala	Ile	Gln	Val	Phe	Leu	Leu	Gly	Gly	Ser	Arg	
927					932					937					942	
aag	cgt	gtg	ctg	gtg	cgt	gtg	gag	cgg	gcc	acg	gtg	tac	agc	gtg	gag	3422
Lys	Arg	Val	Leu	Val	Arg	Val	Glu	Arg	Ala	Thr	Val	Tyr	Ser	Val	Glu	
943					948					953					958	
cag	gac	aat	gat	ctg	gag	ctg	gcc	gac	gcc	tac	tac	ctg	ggg	ggc	gtg	3470
Gln	Asp	Asn	Asp	Leu	Glu	Leu	Ala	Asp	Ala	Tyr	Tyr	Leu	Gly	Gly	Val	
959					964					969					974	
ccg	ccc	gac	cag	ctg	ccc	ccg	agc	ctg	cga	tgg	ctc	ttc	ccc	acc	gga	3518
Pro	Pro	Asp	Gln	Leu	Pro	Pro	Ser	Leu	Arg	Trp	Leu	Phe	Pro	Thr	Gly	
975					980					985					990	
ggc	tca	gtc	cgt	ggc	tgc	gtc	aaa	ggc	atc	aag	gcc	ctg	ggc	aag	tat	3566
Gly	Ser	Val	Arg	Gly	Cys	Val	Lys	Gly	Ile	Lys	Ala	Leu	Gly	Lys	Tyr	
991					996				1001						1006	
gtg	gac	ctc	aag	cgg	ctg	aac	acg	aca	ggc	gtg	agc	gcc	ggc	tgc	acc	3614
Val	Asp	Leu	Lys	Arg	Leu	Asn	Thr	Thr	Gly	Val	Ser	Ala	Gly	Cys	Thr	
1007					1012					1017					1022	
gcc	gac	ctg	ctg	gtg	ggg	cgc	gcc	atg	act	ttc	cat	ggc	cac	ggc	ttc	3662
Ala	Asp	Leu	Leu	Val	Gly	Arg	Ala	Met	Thr	Phe	His	Gly	His	Gly	Phe	
1023					1028					1033					1038	
ctt	cgc	ctg	gcg	ctc	tgc	aac	gtg	gca	ccg	ctc	act	ggc	aac	gtc	tac	3710
Leu	Arg	Leu	Ala	Leu	Ser	Asn	Val	Ala	Pro	Leu	Thr	Gly	Asn	Val	Tyr	
1039					1044					1049					1054	
tcc	ggc	ttc	ggc	ttc	cac	agc	gcc	cag	gac	agt	ggc	ctg	ctc	tac	tac	3758
Ser	Gly	Phe	Gly	Phe	His	Ser	Ala	Gln	Asp	Ser	Ala	Leu	Leu	Tyr	Tyr	
1055					1060					1065					1070	
cgg	gcg	tcc	ccg	gat	ggg	cta	tgc	cag	gtg	tcc	ctg	cag	cag	ggc	cgt	3806
Arg	Ala	Ser	Pro	Asp	Gly	Leu	Cys	Gln	Val	Ser	Leu	Gln	Gln	Gly	Arg	
1071					1076					1081					1086	
gtg	agc	cta	cag	ctc	ctg	agg	act	gaa	gtg	aaa	act	caa	gcg	ggc	ttc	3854
Val	Ser	Leu	Gln	Leu	Leu	Arg	Thr	Glu	Val	Lys	Thr	Gln	Ala	Gly	Phe	
1087					1092					1097					1102	
gcc	gat	ggt	gcc	ccc	cat	tac	gtc	gcc	ttc	tac	agc	aat	gcc	acg	gga	3902
Ala	Asp	Gly	Ala	Pro	His	Tyr	Val	Ala	Phe	Tyr	Ser	Asn	Ala	Thr	Gly	
1103					1108					1113					1118	
gtc	tgg	ctg	tat	gtc	gat	gac	cag	ctc	cag	cag	atg	aag	ccc	cac	cgg	3950
Val	Trp	Leu	Tyr	Val	Asp	Asp	Gln	Leu	Gln	Gln	Met	Lys	Pro	His	Arg	
1119					1124					1129					1134	
gga	cca	ccc	ccc	gag	ctc	cag	ccg	cag	cct	gag	ggg	ccc	ccg	agg	ctc	3998
Gly	Pro	Pro	Pro	Glu	Leu	Gln	Pro	Gln	Pro	Glu	Gly	Pro	Pro	Arg	Leu	
1135					1140					1145					1150	
ctc	ctg	gga	ggc	ctg	cct	gag	tct	ggc	acc	att	tac	aac	ttc	agt	ggc	4046
Leu	Leu	Gly	Gly	Leu	Pro	Glu	Ser	Gly	Thr	Ile	Tyr	Asn	Phe	Ser	Gly	



1151	1156	1161	1166	
tgc atc agc aac gtc ttc gtg cag cgg ctc ctg ggc cca cag cgc gta				4094
Cys Ile Ser Asn Val Phe Val Gln Arg Leu Leu Gly Pro Gln Arg Val				
1167	1172	1177	1182	
ttt gat ctg cag cag aac ctg ggc agc gtc aat gtg agc acg ggc tgt				4142
Phe Asp Leu Gln Gln Asn Leu Gly Ser Val Asn Val Ser Thr Gly Cys				
1183	1188	1193	1198	
gca ccc gcc ctg caa gcc cag acc ccg ggc ctg ggg cct aga gga ctg				4190
Ala Pro Ala Leu Gln Ala Gln Thr Pro Gly Leu Gly Pro Arg Gly Leu				
1199	1204	1209	1214	
cag gcc acc gcc cgg aag gcc tcc cgc cgc agc cgt cag ccc gcc cgg				4238
Gln Ala Thr Ala Arg Lys Ala Ser Arg Arg Ser Arg Gln Pro Ala Arg				
1215	1220	1225	1230	
cat cct gcc tgc atg ctg ccc cca cac ctc agg acc acc cga gac tcc				4286
His Pro Ala Cys Met Leu Pro Pro His Leu Arg Thr Thr Arg Asp Ser				
1231	1236	1241	1246	
tac cag ttt ggg ggt tcc ctg tcc agt cac ctg gag ttt gtg ggc atc				4334
Tyr Gln Phe Gly Gly Ser Leu Ser Ser His Leu Glu Phe Val Gly Ile				
1247	1252	1257	1262	
ctg gcc cga cat agg aac tgg ccc agt ctc tcc atg cac gtc ctc ccg				4382
Leu Ala Arg His Arg Asn Trp Pro Ser Leu Ser Met His Val Leu Pro				
1263	1268	1273	1278	
cga agc tcc cga ggc ctc ctc ctc ttc act gcc cgt ctg agg ccc ggc				4430
Arg Ser Ser Arg Gly Leu Leu Leu Phe Thr Ala Arg Leu Arg Pro Gly				
1279	1284	1289	1294	
agc ccc tcc ctg gcg ctc ttc ctg agc aat ggc cac ttc gtt gca cag				4478
Ser Pro Ser Leu Ala Leu Phe Leu Ser Asn Gly His Phe Val Ala Gln				
1295	1300	1305	1310	
atg gaa ggc ctc ggg act cgg ctc cgc gcc cag agc cgc cag cgc tcc				4526
Met Glu Gly Leu Gly Thr Arg Leu Arg Ala Gln Ser Arg Gln Arg Ser				
1311	1316	1321	1326	
cgg cct ggc cgc tgg cac aag gtc tcc gtg cgc tgg gag aag aac cgg				4574
Arg Pro Gly Arg Trp His Lys Val Ser Val Arg Trp Glu Lys Asn Arg				
1327	1332	1337	1342	
atc ctg ctg gtg acg gac ggg gcc cgg gcc tgg agc cag gag ggg ccg				4622
Ile Leu Leu Val Thr Asp Gly Ala Arg Ala Trp Ser Gln Glu Gly Pro				
1343	1348	1353	1358	
cac cgg cag cac cag ggg gca gag cac ccc cag ccc cac acc ctc ttt				4670
His Arg Gln His Gln Gly Ala Glu His Pro Gln Pro His Thr Leu Phe				
1359	1364	1369	1374	
gtg ggc ggc ctc ccg gcc agc agc cac agc tcc aaa ctt ccg gtg acc				4718
Val Gly Gly Leu Pro Ala Ser Ser His Ser Ser Lys Leu Pro Val Thr				
1375	1380	1385	1390	

gtc ggg ttc agc ggc tgt gtg aag aga ctg agg ctg cac ggg agg ccc	4766
Val Gly Phe Ser Gly Cys Val Lys Arg Leu Arg Leu His Gly Arg Pro	
1391 1396 1401 1406	
ctg ggg gcc ccc aca cgg atg gca ggg gtc aca ccc tgc atc ttg ggc	4814
Leu Gly Ala Pro Thr Arg Met Ala Gly Val Thr Pro Cys Ile Leu Gly	
1407 1412 1417 1422	
ccc ctg gag gcg ggc ctg ttc ttc cca ggc agc ggg gga gtt atc act	4862
Pro Leu Glu Ala Gly Leu Phe Phe Pro Gly Ser Gly Gly Val Ile Thr	
1423 1428 1433 1438	
tta gac ctc cca gga gct aca ctg cct gat gtg ggc ctg gaa ctg gag	4910
Leu Asp Leu Pro Gly Ala Thr Leu Pro Asp Val Gly Leu Glu Leu Glu	
1439 1444 1449 1454	
gtg cgg ccc ctg gca gtc acc gga ctg atc ttc cac ttg ggc cag gcc	4958
Val Arg Pro Leu Ala Val Thr Gly Leu Ile Phe His Leu Gly Gln Ala	
1455 1460 1465 1470	
cgg acg ccc ccc tac ttg cag ttg cag gtg acc gag aag caa gtc ctg	5006
Arg Thr Pro Pro Tyr Leu Gln Leu Gln Val Thr Glu Lys Gln Val Leu	
1471 1476 1481 1486	
ctg cgg gcg gat gac gga gca ggg gag ttc tcc acg tca gtg acc cgc	5054
Leu Arg Ala Asp Asp Gly Ala Gly Glu Phe Ser Thr Ser Val Thr Arg	
1487 1492 1497 1502	
ccc tca gtg ctg tgt gat ggc cag tgg cac cgg cta gcg gtg atg aaa	5102
Pro Ser Val Leu Cys Asp Gly Gln Trp His Arg Leu Ala Val Met Lys	
1503 1508 1513 1518	
agc ggg aat gtg ctc cgg ctg gag gtg gac gcg cag agc aac cac acc	5150
Ser Gly Asn Val Leu Arg Leu Glu Val Asp Ala Gln Ser Asn His Thr	
1519 1524 1529 1534	
gtg ggc ccc ttg ctg gcg gct gca gct ggt gcc cca gcc cct ctg tac	5198
Val Gly Pro Leu Leu Ala Ala Ala Gly Ala Pro Ala Pro Leu Tyr	
1535 1540 1545 1550	
ctc ggg ggc ctg cct gag ccc atg gcc gtg cag ccc tgg ccc ccc gcc	5246
Leu Gly Gly Leu Pro Glu Pro Met Ala Val Gln Pro Trp Pro Pro Ala	
1551 1556 1561 1566	
tac tgc ggc tgc atg agg agg ctg gcg gtg aac cgg tcc ccc gtc gcc	5294
Tyr Cys Gly Cys Met Arg Arg Leu Ala Val Asn Arg Ser Pro Val Ala	
1567 1572 1577 1582	
atg act cgc tct gtg gag gtc cac ggg gca gtg ggg gcc agt ggc tgc	5342
Met Thr Arg Ser Val Glu Val His Gly Ala Val Gly Ala Ser Gly Cys	
1583 1588 1593 1598	
cca gcc gcc tag gac acagccaacc ccggccctg gtcaggcccc tgcagctgcc	5397
Pro Ala Ala *	
1599	

tcacaccgcc ccttgtgctc gcctcatagg tgtctatcttg gactctaagc tctacgggtg 5457  
acagatcttg tttctgaaga tggtttaagt tatagcttct taaacgaaag aataaaatac 5517  
tgcaaaatgt ttttatatctt ggcccttcca cccattttta attgtgagag atttgtcacc 5577  
aatcatcact ggttcctcct taaaaattaa aaagtaactt ctgtgtaacc gaaaaaaaaa 5637  
aaa 5640

<210> 42  
<211> 1887  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (55) .. (1563)

<400> 42  
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Met  
1

ggc ggc atc atg gct ggc agc tca ggc tcc gag cac ggc ggc ggc agc 105  
Gly Gly Ile Met Ala Gly Ser Ser Gly Ser Glu His Gly Gly Gly Ser  
2 7 12 17

tgc gga ggc tcg gac ctg ccc ctg cgt ttc ccc tac ggg cgg cca gag 153  
Cys Gly Gly Ser Asp Leu Pro Leu Arg Phe Pro Tyr Gly Arg Pro Glu  
18 23 28 33

ttc ctg ggg ctg tct cag gac gag gtg gag tgc agc gcc gac cac atc 201  
Phe Leu Gly Leu Ser Gln Asp Glu Val Glu Cys Ser Ala Asp His Ile  
34 39 44 49

gcc cgc ccc atc ctc atc ctc aag gag act cgg cgg ctg ccc tgg gcc 249  
Ala Arg Pro Ile Leu Ile Leu Lys Glu Thr Arg Arg Leu Pro Trp Ala  
50 55 60 65

act ggc tac gca gag gtt atc aat gcc ggg aag agc aca cac aat gaa 297  
Thr Gly Tyr Ala Glu Val Ile Asn Ala Gly Lys Ser Thr His Asn Glu  
66 71 76 81

gac caa gcc agc tgt gag gtg ctc act gtg aag aag aag gca ggg gcc 345  
Asp Gln Ala Ser Cys Glu Val Leu Thr Val Lys Lys Lys Ala Gly Ala  
82 87 92 97

gtg acc tca acc cca aac agg aac tca tcc aag aga cgg tcc tcc ctt 393  
Val Thr Ser Thr Pro Asn Arg Asn Ser Ser Lys Arg Arg Ser Ser Leu  
98 103 108 113

ccc aat ggg gaa ggg ctg cag ctg aag gag aac tcg gaa tcc gag ggt 441  
Pro Asn Gly Glu Gly Leu Gln Leu Lys Glu Asn Ser Glu Ser Glu Gly



gag gac ttg aag ttc ccc ctt ata tat gga gaa ggc aag aag gcc cgg	1161
Glu Asp Leu Lys Phe Pro Leu Ile Tyr Gly Glu Gly Lys Lys Ala Arg	
354 359 364 369	
gta atg gca act att gga gtg acc agg gga ctt ggg gac cat gac ctg	1209
Val Met Ala Thr Ile Gly Val Thr Arg Gly Leu Gly Asp His Asp Leu	
370 375 380 385	
aag gtg cat gac tcc aac atc tac att aaa cca ttc ctg tct tca gct	1257
Lys Val His Asp Ser Asn Ile Tyr Ile Lys Pro Phe Leu Ser Ser Ala	
386 391 396 401	
cca gag gta aga atc tac gat ctt tca aaa tat gat cat gga tca gat	1305
Pro Glu Val Arg Ile Tyr Asp Leu Ser Lys Tyr Asp His Gly Ser Asp	
402 407 412 417	
gat gtg ctg atc ttg gcc act gat gga ctc tgg gac gtt tta tca aat	1353
Asp Val Leu Ile Leu Ala Thr Asp Gly Leu Trp Asp Val Leu Ser Asn	
418 423 428 433	
gaa gaa gta gca gaa gca atc act cag ttt ctt cct aac tgt gat cca	1401
Glu Glu Val Ala Glu Ala Ile Thr Gln Phe Leu Pro Asn Cys Asp Pro	
434 439 444 449	
gat gat cct cac agg tac aca ctg gca gct cag gac ctg gtg atg cgt	1449
Asp Asp Pro His Arg Tyr Thr Leu Ala Ala Gln Asp Leu Val Met Arg	
450 455 460 465	
gcc cgg ggt gtg ctg aag gac aga gga tgg cgg ata tct aat gac cga	1497
Ala Arg Gly Val Leu Lys Asp Arg Gly Trp Arg Ile Ser Asn Asp Arg	
466 471 476 481	
ctg ggc tca gga gac gac att tct gta tat gtc att cct tta ata cat	1545
Leu Gly Ser Gly Asp Asp Ile Ser Val Tyr Val Ile Pro Leu Ile His	
482 487 492 497	
gga aac aag ctg tca tga aaatgg cccaggggat tgggaggaca gaggggaaga	1599
Gly Asn Lys Leu Ser *	
498 503	
aagctgggat gcctcttggc aggacggaac tgggaagtgc cccagctgag ttccaagtga	1659
tgcaagtctct tcccagccca agcggggagt tcatggccaa aagactatgc ttcaaatga	1719
ccctttggtt tccatttctt ctttagtaac aggccaactc aacaagagca aaacacaaag	1779
gctgctacca agtgttgttg tatttcagtt cctttcatag gcctccgagg tggccattga	1839
ctatttgggg tatatatggc atatttattt tatctagagt agctgggg	1887

<210> 43  
 <211> 1416  
 <212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (240) ..(1097)

<400> 43

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tccaaggact ccaaagcgag gccggggact gaagggtgtg gtgtcgagcc ctctggcaga	120
gggttaacct ggggtcaaag cacggattct cacctcgtag agttacgctc tcccgcggca	180
cgccccgag gacttgaagt cctgagcgt caagtttgtc cgtagggtcga gagaaggcc	239
atg gag gtg ccg cca ccg gca ccg cgg agc ttt ctc tgt aga gca ttg	287
Met Glu Val Pro Pro Pro Ala Pro Arg Ser Phe Leu Cys Arg Ala Leu	
1 5 10 15	
tgc cta ttt ccc cga gtc ttt gct gcc gaa gct gtg act gcc gat tcg	335
Cys Leu Phe Pro Arg Val Phe Ala Ala Glu Ala Val Thr Ala Asp Ser	
17 22 27 32	
gaa gtc ctt gag gag cgt cag aag cgg ctt ccc tac gtc cca gag ccc	383
Glu Val Leu Glu Glu Arg Gln Lys Arg Leu Pro Tyr Val Pro Glu Pro	
33 38 43 48	
tat tac ccg gaa tct gga tgg gac cgc ctc cgg gag ctg ttt ggc aaa	431
Tyr Tyr Pro Glu Ser Gly Trp Asp Arg Leu Arg Glu Leu Phe Gly Lys	
49 54 59 64	
gat gaa cag cag aga att tca aag gac ctt gct gat atc tgt aag acg	479
Asp Glu Gln Gln Arg Ile Ser Lys Asp Leu Ala Asp Ile Cys Lys Thr	
65 70 75 80	
gca gct aca gca ggc atc att ggc tgg gtg tat ggg gga ata cca gct	527
Ala Ala Thr Ala Gly Ile Ile Gly Trp Val Tyr Gly Gly Ile Pro Ala	
81 86 91 96	
ttt att cat gct aaa caa caa tac att gag cag agc cag gca gaa att	575
Phe Ile His Ala Lys Gln Gln Tyr Ile Glu Gln Ser Gln Ala Glu Ile	
97 102 107 112	
tat cat aac cgg ttt gat gct gtg caa tct gca cat cgt gct gcc aca	623
Tyr His Asn Arg Phe Asp Ala Val Gln Ser Ala His Arg Ala Ala Thr	
113 118 123 128	
cga ggc ttc att cgt tat ggc tgg cgc tgg ggt tgg aga act gca gtg	671
Arg Gly Phe Ile Arg Tyr Gly Trp Arg Trp Gly Trp Arg Thr Ala Val	
129 134 139 144	
ttt gtg act ata ttc aac aca gtg aac act agt ctg aat gta tac cga	719
Phe Val Thr Ile Phe Asn Thr Val Asn Thr Ser Leu Asn Val Tyr Arg	
145 150 155 160	
aat aaa gat gcc tta agc cat ttt gta att gca gga gct gtc acg gga	767
Asn Lys Asp Ala Leu Ser His Phe Val Ile Ala Gly Ala Val Thr Gly	
161 166 171 176	

agt ctt ttt agg ata aac gta ggc ctg cgt ggc ctg gtg gct ggt ggc	815
Ser Leu Phe Arg Ile Asn Val Gly Leu Arg Gly Leu Val Ala Gly Gly	
177 182 187 192	
ata att gga gcc ttg ctg ggc act cct gta gga ggc ctg ctg atg gca	863
Ile Ile Gly Ala Leu Leu Gly Thr Pro Val Gly Gly Leu Leu Met Ala	
193 198 203 208	
ttt cag aag tac tct ggt gag act gtt cag gaa aaa aaa cag aag gat	911
Phe Gln Lys Tyr Ser Gly Glu Thr Val Gln Glu Lys Lys Gln Lys Asp	
209 214 219 224	
cga aag gca ctc cat gag cta aaa ctg gaa gag tgg aaa ggc aga cta	959
Arg Lys Ala Leu His Glu Leu Lys Leu Glu Glu Trp Lys Gly Arg Leu	
225 230 235 240	
caa gtt act gag cac ctc cct gag aaa att gaa agt agt tta cag gaa	1007
Gln Val Thr Glu His Leu Pro Glu Lys Ile Glu Ser Ser Leu Gln Glu	
241 246 251 256	
gat gaa cct gag aat gat gct aag aaa att gaa gca ctg cta aac ctt	1055
Asp Glu Pro Glu Asn Asp Ala Lys Lys Ile Glu Ala Leu Leu Asn Leu	
257 262 267 272	
cct aga aac cct tca gta ata gat aaa caa gac aag gac tga aagtgct	1104
Pro Arg Asn Pro Ser Val Ile Asp Lys Gln Asp Lys Asp *	
273 278 283	
ctgaacttga aactcactgg agagctgaag ggagctgcca tgtccgatga atgccaacag	1164
acaggccact ctttggtcag cctgctgaca aatttaagtg ctggtacctg tggtaggcagt	1224
ggcttgctct tgtctttttc ttttcttttt aactaagaat ggggctgttg tactctcact	1284
ttacttatcc ttcaatttaa atacatactt atgtttgtat taatctatca atatatgcat	1344
acatgaatat atccaccac ctagatttta agcagtaaataaaaacatttc gcaaaagatt	1404
aaaaaaaaaa aa	1416

<210> 44  
 <211> 2401  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (73) .. (1752)

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gagcagcgca gt atg gcg ggc ggg gcc cgg gag gtg ctc aca ctg cag	108

Met Ala Gly Gly Ala Arg Glu Val Leu Thr Leu Gln  
 1 5 10

ttg gga cat ttt gcc ggt ttc gtg ggc gcg cac tgg tgg aac cag cag	156
Leu Gly His Phe Ala Gly Phe Val Gly Ala His Trp Trp Asn Gln Gln	
13 18 23 28	
gat gct gcg ctg ggc cga gcg acc gat tcc aag gag ccc ccg gga gag	204
Asp Ala Ala Leu Gly Arg Ala Thr Asp Ser Lys Glu Pro Pro Gly Glu	
29 34 39 44	
ctg tgc ccc gac gtc ctg tat cgt acg ggc cgg acg ctg cac ggc cag	252
Leu Cys Pro Asp Val Leu Tyr Arg Thr Gly Arg Thr Leu His Gly Gln	
45 50 55 60	
gag acc tac acg ccg cga ctc atc ctc atg gat ctg aag ggt agt ttg	300
Glu Thr Tyr Thr Pro Arg Leu Ile Leu Met Asp Leu Lys Gly Ser Leu	
61 66 71 76	
agc tcc cta aaa gag gaa ggt gga ctc tac agg gac aaa cag ttg gat	348
Ser Ser Leu Lys Glu Glu Gly Gly Leu Tyr Arg Asp Lys Gln Leu Asp	
77 82 87 92	
gat gca ata gca tgg cag ggg aag ctc acc aca cac aaa gag gaa ctc	396
Asp Ala Ile Ala Trp Gln Gly Lys Leu Thr Thr His Lys Glu Glu Leu	
93 98 103 108	
tat ccc aag aac cct tat ctc caa gac ttt ctg agt gca gag gga gtg	444
Tyr Pro Lys Asn Pro Tyr Leu Gln Asp Phe Leu Ser Ala Glu Gly Val	
109 114 119 124	
ctg agt agt gat ggt gtc tgg agg gtc aaa tcc att ccc aat ggc aaa	492
Leu Ser Ser Asp Gly Val Trp Arg Val Lys Ser Ile Pro Asn Gly Lys	
125 130 135 140	
ggt tcc tca cca ctc ccc acc gct aca act cca aaa cca ctt atc cct	540
Gly Ser Ser Pro Leu Pro Thr Ala Thr Thr Pro Lys Pro Leu Ile Pro	
141 146 151 156	
aca gag gcc agc atc agg gtc tgg tca gac ttc ctc aga gtc cat ctc	588
Thr Glu Ala Ser Ile Arg Val Trp Ser Asp Phe Leu Arg Val His Leu	
157 162 167 172	
cat ccc cgg agc atc tgt atg att cag aag tac aac cac gat ggg gaa	636
His Pro Arg Ser Ile Cys Met Ile Gln Lys Tyr Asn His Asp Gly Glu	
173 178 183 188	
gca ggt cgg ctg gag gct ttt ggc caa ggg gaa agt gtc cta aag gaa	684
Ala Gly Arg Leu Glu Ala Phe Gly Gln Gly Glu Ser Val Leu Lys Glu	
189 194 199 204	
ccc aag tac cag gaa gag ctg gag gac agg ctg cat ttc tac gtg gag	732
Pro Lys Tyr Gln Glu Glu Leu Glu Asp Arg Leu His Phe Tyr Val Glu	
205 210 215 220	
gaa tgt gac tac ttg cag ggc ttc cag atc ctg tgt gac ctg cac gat	780
Glu Cys Asp Tyr Leu Gln Gly Phe Gln Ile Leu Cys Asp Leu His Asp	



221	226	231	236	
ggc ttc tct ggg gta ggc gcg aag gcg gca gag ctg cta caa gat gaa	ggc gcg aag gcg gca gag ctg cta caa gat gaa	ggc gcg aag gcg gca gag ctg cta caa gat gaa	ggc gcg aag gcg gca gag ctg cta caa gat gaa	828
Gly Phe Ser Gly Val Gly Ala Lys Ala Ala Glu Leu Leu Gln Asp Glu	Gly Ala Lys Ala Ala Glu Leu Leu Gln Asp Glu	Gly Ala Lys Ala Ala Glu Leu Leu Gln Asp Glu	Gly Ala Lys Ala Ala Glu Leu Leu Gln Asp Glu	
237	242	247	252	
tat tca ggg cgg gga ata ata acc tgg ggc ctg cta cct ggt ccc tac	ata ata acc tgg ggc ctg cta cct ggt ccc tac	ata ata acc tgg ggc ctg cta cct ggt ccc tac	ata ata acc tgg ggc ctg cta cct ggt ccc tac	876
Tyr Ser Gly Arg Gly Ile Ile Thr Trp Gly Leu Leu Pro Gly Pro Tyr	Ile Ile Thr Trp Gly Leu Leu Pro Gly Pro Tyr	Ile Ile Thr Trp Gly Leu Leu Pro Gly Pro Tyr	Ile Ile Thr Trp Gly Leu Leu Pro Gly Pro Tyr	
253	258	263	268	
cat cgt ggg gag gcc cag aga aac atc tat cgt cta tta aac aca gct	cag aga aac atc tat cgt cta tta aac aca gct	cag aga aac atc tat cgt cta tta aac aca gct	cag aga aac atc tat cgt cta tta aac aca gct	924
His Arg Gly Glu Ala Gln Arg Asn Ile Tyr Arg Leu Leu Asn Thr Ala	Gln Arg Asn Ile Tyr Arg Leu Leu Asn Thr Ala	Gln Arg Asn Ile Tyr Arg Leu Leu Asn Thr Ala	Gln Arg Asn Ile Tyr Arg Leu Leu Asn Thr Ala	
269	274	279	284	
ttt ggt ctc gtg cac ctg act gct cac agc tct ctt gtc tgc ccc ttg	act gct cac agc tct ctt gtc tgc ccc ttg	act gct cac agc tct ctt gtc tgc ccc ttg	act gct cac agc tct ctt gtc tgc ccc ttg	972
Phe Gly Leu Val His Leu Thr Ala His Ser Ser Leu Val Cys Pro Leu	Leu Thr Ala His Ser Ser Leu Val Cys Pro Leu	Leu Thr Ala His Ser Ser Leu Val Cys Pro Leu	Leu Thr Ala His Ser Ser Leu Val Cys Pro Leu	
285	290	295	300	
tcc ttg ggt ggg agc ctg ggc ctg cga ccc gag cca cct gtc agc ttc	ggc ctg cga ccc gag cca cct gtc agc ttc	ggc ctg cga ccc gag cca cct gtc agc ttc	ggc ctg cga ccc gag cca cct gtc agc ttc	1020
Ser Leu Gly Gly Ser Leu Gly Leu Arg Pro Glu Pro Pro Val Ser Phe	Leu Gly Leu Arg Pro Glu Pro Pro Val Ser Phe	Leu Gly Leu Arg Pro Glu Pro Pro Val Ser Phe	Leu Gly Leu Arg Pro Glu Pro Pro Val Ser Phe	
301	306	311	316	
cct tac ctg cat tat gat gcc act ctg ccc ttc cac tgc agt gcc atc	act ctg ccc ttc cac tgc agt gcc atc	act ctg ccc ttc cac tgc agt gcc atc	act ctg ccc ttc cac tgc agt gcc atc	1068
Pro Tyr Leu His Tyr Asp Ala Thr Leu Pro Phe His Cys Ser Ala Ile	Thr Leu Pro Phe His Cys Ser Ala Ile	Thr Leu Pro Phe His Cys Ser Ala Ile	Thr Leu Pro Phe His Cys Ser Ala Ile	
317	322	327	332	
ctg gct aca gcc ctg gac aca gtc act gtt cct tat cgc ctg tgt tcc	gac aca gtc act gtt cct tat cgc ctg tgt tcc	gac aca gtc act gtt cct tat cgc ctg tgt tcc	gac aca gtc act gtt cct tat cgc ctg tgt tcc	1116
Leu Ala Thr Ala Leu Asp Thr Val Thr Val Pro Tyr Arg Leu Cys Ser	Ala Thr Ala Leu Asp Thr Val Thr Val Pro Tyr Arg Leu Cys Ser	Ala Thr Ala Leu Asp Thr Val Thr Val Pro Tyr Arg Leu Cys Ser	Ala Thr Ala Leu Asp Thr Val Thr Val Pro Tyr Arg Leu Cys Ser	
333	338	343	348	
tct cca gtt tcc atg gtt cat ctg gct gac atg ctg agc ttc tgt ggg	gtt cat ctg gct gac atg ctg agc ttc tgt ggg	gtt cat ctg gct gac atg ctg agc ttc tgt ggg	gtt cat ctg gct gac atg ctg agc ttc tgt ggg	1164
Ser Pro Val Ser Met Val His Leu Ala Asp Met Leu Ser Phe Cys Gly	Val His Leu Ala Asp Met Leu Ser Phe Cys Gly	Val His Leu Ala Asp Met Leu Ser Phe Cys Gly	Val His Leu Ala Asp Met Leu Ser Phe Cys Gly	
349	354	359	364	
aaa aag gtg gtg aca gca gga gca atc atc cct ttc ccc ttg gct cca	gca gga gca atc atc cct ttc ccc ttg gct cca	gca gga gca atc atc cct ttc ccc ttg gct cca	gca gga gca atc atc cct ttc ccc ttg gct cca	1212
Lys Lys Val Val Thr Ala Gly Ala Ile Ile Pro Phe Pro Leu Ala Pro	Lys Lys Val Val Thr Ala Gly Ala Ile Ile Pro Phe Pro Leu Ala Pro	Lys Lys Val Val Thr Ala Gly Ala Ile Ile Pro Phe Pro Leu Ala Pro	Lys Lys Val Val Thr Ala Gly Ala Ile Ile Pro Phe Pro Leu Ala Pro	
365	370	375	380	
ggc cag tcc ctt cct gat tcc ctg atg cag ttt gga gga gcc acc cca	cag tcc ctg atg cag ttt gga gga gcc acc cca	cag tcc ctg atg cag ttt gga gga gcc acc cca	cag tcc ctg atg cag ttt gga gga gcc acc cca	1260
Gly Gln Ser Leu Pro Asp Ser Leu Met Gln Phe Gly Gly Ala Thr Pro	Gln Ser Leu Met Gln Phe Gly Gly Ala Thr Pro	Gln Ser Leu Met Gln Phe Gly Gly Ala Thr Pro	Gln Ser Leu Met Gln Phe Gly Gly Ala Thr Pro	
381	386	391	396	
tgg acc cca ctg tct gca tgt ggg gag cct tct gga aca cgt tgt ttt	acc cca ctg tct gca tgt ggg gag cct tct gga aca cgt tgt ttt	acc cca ctg tct gca tgt ggg gag cct tct gga aca cgt tgt ttt	acc cca ctg tct gca tgt ggg gag cct tct gga aca cgt tgt ttt	1308
Trp Thr Pro Leu Ser Ala Cys Gly Glu Pro Ser Gly Thr Arg Cys Phe	Thr Pro Leu Ser Ala Cys Gly Glu Pro Ser Gly Thr Arg Cys Phe	Thr Pro Leu Ser Ala Cys Gly Glu Pro Ser Gly Thr Arg Cys Phe	Thr Pro Leu Ser Ala Cys Gly Glu Pro Ser Gly Thr Arg Cys Phe	
397	402	407	412	
gcc cag tca gtg gtg ctg agg ggt ata gac aga gca tgc cac aca agc	cag tca gtg gtg ctg agg ggt ata gac aga gca tgc cac aca agc	cag tca gtg gtg ctg agg ggt ata gac aga gca tgc cac aca agc	cag tca gtg gtg ctg agg ggt ata gac aga gca tgc cac aca agc	1356
Ala Gln Ser Val Val Leu Arg Gly Ile Asp Arg Ala Cys His Thr Ser	Gln Ser Val Val Leu Arg Gly Ile Asp Arg Ala Cys His Thr Ser	Gln Ser Val Val Leu Arg Gly Ile Asp Arg Ala Cys His Thr Ser	Gln Ser Val Val Leu Arg Gly Ile Asp Arg Ala Cys His Thr Ser	
413	418	423	428	
cag ctc acc cca ggg aca cct cca ccc tct gcc ctt cat gca tgt acc	acc cca ggg aca cct cca ccc tct gcc ctt cat gca tgt acc	acc cca ggg aca cct cca ccc tct gcc ctt cat gca tgt acc	acc cca ggg aca cct cca ccc tct gcc ctt cat gca tgt acc	1404
Gln Leu Thr Pro Gly Thr Pro Pro Pro Ser Ala Leu His Ala Cys Thr	Leu Thr Pro Gly Thr Pro Pro Pro Ser Ala Leu His Ala Cys Thr	Leu Thr Pro Gly Thr Pro Pro Pro Ser Ala Leu His Ala Cys Thr	Leu Thr Pro Gly Thr Pro Pro Pro Ser Ala Leu His Ala Cys Thr	
429	434	439	444	
act ggg gaa gaa atc ttg gct cag tat tta caa cag cag cag cct gga	ggg gaa gaa atc ttg gct cag tat tta caa cag cag cag cct gga	ggg gaa gaa atc ttg gct cag tat tta caa cag cag cag cct gga	ggg gaa gaa atc ttg gct cag tat tta caa cag cag cag cct gga	1452
Thr Gly Glu Glu Ile Leu Ala Gln Tyr Leu Gln Gln Gln Gln Pro Gly	Glu Glu Ile Leu Ala Gln Tyr Leu Gln Gln Gln Gln Pro Gly	Glu Glu Ile Leu Ala Gln Tyr Leu Gln Gln Gln Gln Pro Gly	Glu Glu Ile Leu Ala Gln Tyr Leu Gln Gln Gln Gln Pro Gly	
445	450	455	460	

gtc atg agt tct tcc cat ctg ctg ctg act ccc tgc agg gtg gct cct	1500
Val Met Ser Ser Ser His Leu Leu Leu Thr Pro Cys Arg Val Ala Pro	
461 466 471 476	
cct tac ccc cac ctc ttc tca agc tgc agt cca ccg gca gtg gag agc	1548
Pro Tyr Pro His Leu Phe Ser Ser Cys Ser Pro Pro Ala Val Glu Ser	
477 482 487 492	
atc cca gtg ttt ggg gca ctg tgt tcc tct tcg tcc ctg cac cag acc	1596
Ile Pro Val Phe Gly Ala Leu Cys Ser Ser Ser Ser Leu His Gln Thr	
493 498 503 508	
ctg gaa gcc ttg gcc aga gac ctc acc aaa ctc gac <sup>h</sup> ttg cgg cgc tgg	1644
Leu Glu Ala Leu Ala Arg Asp Leu Thr Lys Leu Asp Leu Arg Arg Trp	
509 514 519 524	
gcc agc ttc atg gat gct gga gtg gag cac gat gac gta gca gag ctg	1692
Ala Ser Phe Met Asp Ala Gly Val Glu His Asp Asp Val Ala Glu Leu	
525 530 535 540	
ctg cag gag cta caa agc ctg gcc cag tgc tac cag ggt ggt gac agc	1740
Leu Gln Glu Leu Gln Ser Leu Ala Gln Cys Tyr Gln Gly Gly Asp Ser	
541 546 551 556	
ctc gtg gac taa agt tcccagtggt ggagaaagga gctagtttgc aataaaaaaca	1795
Leu Val Asp *	
557	
gctggatgca ggagcccagt gtcttcatgc agaggagctc aatgtgcggt gactagctac	1855
accaacatat gcacttttta catttagaaa cactgtgatt agaccacaga acaataaata	1915
tggtccatca gaccaaaaaa aagtagagaa aggagctgaa ctccactctc gatgctactt	1975
acagaggaca tctgtaaagt cttcataaaa gacottgaat gatgcctagg atggcagagc	2035
ccctgggtcc tactccatcc tccagccttt gtccttgtec tggcctcctg ctctccagat	2095
ctgtaaactg ggctcaagga ctgtacaagc agagtacaac taccgcctc cccggtgcca	2155
gggcgcctgt tgggttttgt cctgtgtaga tgattcccag agtctcattc atccagctcc	2215
tcttcagaca gaaggtcccc atggtcagac agctgggtctg cattgctggt actggttgca	2275
tcacctcat cctcagagct ggcttcacag gcagtgtgga agagctgcat gagttctcga	2335
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aacatt	2401

<210> 45  
 <211> 2905  
 <212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (173)..(2452)

<400> 45

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agcgagagg aaaggcggct tttagccagg tatttcagtg tctgtagaca ag atg 175  
Met  
1

gaa tca tct cca ttt aat aga cgg caa tgg acc tca cta tca ttg agg 223  
Glu Ser Ser Pro Phe Asn Arg Arg Gln Trp Thr Ser Leu Ser Leu Arg  
2 7 12 17

gta aca gcc aaa gaa ctt tct ctt gtc aac aag aac aag tca tcg gct 271  
Val Thr Ala Lys Glu Leu Ser Leu Val Asn Lys Asn Lys Ser Ser Ala  
18 23 28 33

att gtg gaa ata ttc tcc aag tac cag aaa gca gct gaa gaa aca aac 319  
Ile Val Glu Ile Phe Ser Lys Tyr Gln Lys Ala Ala Glu Glu Thr Asn  
34 39 44 49

atg gag aag aag aga agt aac acc gaa aat ctc tcc cag cac ttt aga 367  
Met Glu Lys Lys Arg Ser Asn Thr Glu Asn Leu Ser Gln His Phe Arg  
50 55 60 65

aag ggg acc ctg act gtg tta aag aag aag tgg gag aac cca ggg ctg 415  
Lys Gly Thr Leu Thr Val Leu Lys Lys Lys Trp Glu Asn Pro Gly Leu  
66 71 76 81

gga gca gag tct cac aca gac tct cta cgg aac agc agc act gag att 463  
Gly Ala Glu Ser His Thr Asp Ser Leu Arg Asn Ser Ser Thr Glu Ile  
82 87 92 97

agg cac aga gca gac cat cct cct gct gaa gtg aca agc cac gct gct 511  
Arg His Arg Ala Asp His Pro Pro Ala Glu Val Thr Ser His Ala Ala  
98 103 108 113

tct gga gcc aaa gct gac caa gaa gaa caa atc cac ccc aga tct aga 559  
Ser Gly Ala Lys Ala Asp Gln Glu Glu Gln Ile His Pro Arg Ser Arg  
114 119 124 129

ctc agg tca cct cct gaa gcc ctc gtt cag ggt cga tat ccc cac atc 607  
Leu Arg Ser Pro Pro Glu Ala Leu Val Gln Gly Arg Tyr Pro His Ile  
130 135 140 145

aag gac ggt gag gat ctt aaa gac cac tca aca gaa agt aaa aaa atg 655  
Lys Asp Gly Glu Asp Leu Lys Asp His Ser Thr Glu Ser Lys Lys Met  
146 151 156 161

gaa aat tgt cta gga gaa tcc agg cat gaa gta gaa aaa tca gaa atc 703  
Glu Asn Cys Leu Gly Glu Ser Arg His Glu Val Glu Lys Ser Glu Ile

162	167	172	177	
agt gaa aac aca gat	gct tcg ggc aaa ata	gag aaa tat aat gtt ccg	751	
Ser Glu Asn Thr Asp	Ala Ser Gly Lys Ile	Glu Lys Tyr Asn Val Pro		
178	183	188	193	
ctg aac agg ctt aag	atg atg ttt gag aaa	ggt gaa cca act caa act	799	
Leu Asn Arg Leu Lys	Met Met Phe Glu Lys	Gly Glu Pro Thr Gln Thr		
194	199	204	209	
aag att ctc cgg gcc	caa agc cga agt gca	agt gga agg aag atc tct	847	
Lys Ile Leu Arg Ala	Gln Ser Arg Ser Ala	Ser Gly Arg Lys Ile Ser		
210	215	220	225	
gaa aac agc tat tct	cta gat gac ctg gaa	ata ggc cca ggt cag ttg	895	
Glu Asn Ser Tyr Ser	Leu Asp Asp Leu Glu	Ile Gly Pro Gly Gln Leu		
226	231	236	241	
tca tct tct aca ttt	gac tcg gag aaa aat	gag agt aga cga aat ctg	943	
Ser Ser Ser Thr Phe	Asp Ser Glu Lys Asn	Glu Ser Arg Arg Asn Leu		
242	247	252	257	
gaa ctt cca cgc ctc	tca gaa acc tct ata	aag gat cga atg gcc aag	991	
Glu Leu Pro Arg Leu	Ser Glu Thr Ser Ile	Lys Asp Arg Met Ala Lys		
258	263	268	273	
tac cag gca gct gtg	tcc aaa caa agc agc	tca acc aac tat aca aat	1039	
Tyr Gln Ala Ala Val	Ser Lys Gln Ser Ser	Ser Thr Asn Tyr Thr Asn		
274	279	284	289	
gag ctg aaa gcc agt	ggt ggc gaa atc aaa	att cat aaa atg gag caa	1087	
Glu Leu Lys Ala Ser	Gly Gly Glu Ile Lys	Ile His Lys Met Glu Gln		
290	295	300	305	
aag gag aat gtg ccc	cca ggt cct gag gtc	tgc atc acc cat cag gaa	1135	
Lys Glu Asn Val Pro	Pro Gly Pro Glu Val	Cys Ile Thr His Gln Glu		
306	311	316	321	
ggg gaa aag att tct	gca aat gag aat agc	ctg gca gtc cgt tcc acc	1183	
Gly Glu Lys Ile Ser	Ala Asn Glu Asn Ser	Leu Ala Val Arg Ser Thr		
322	327	332	337	
cct gcc gaa gat gac	tcc cgt gac tcc cag	gtt aag agt gag gtt caa	1231	
Pro Ala Glu Asp Asp	Ser Arg Asp Ser Gln	Val Lys Ser Glu Val Gln		
338	343	348	353	
cag cct gtc cat ccc	aag cca cta agt cca	gat tcc aga gcc tcc agt	1279	
Gln Pro Val His Pro	Lys Pro Leu Ser Pro	Asp Ser Arg Ala Ser Ser		
354	359	364	369	
ctt tct gaa agt tct	cct ccc aaa gca atg	aag aag ttt cag gca cct	1327	
Leu Ser Glu Ser Ser	Pro Pro Lys Ala Met	Lys Lys Phe Gln Ala Pro		
370	375	380	385	
gca aga gag acc tgc	gtg gaa tgt cag aag	aca gtc tat cca atg gag	1375	
Ala Arg Glu Thr Cys	Val Glu Cys Gln Lys	Thr Val Tyr Pro Met Glu		
386	391	396	401	

cgt ctc ttg gcc aac cag cag gtg ttt cac atc agc tgc ttc cgt tgc	1423
Arg Leu Leu Ala Asn Gln Gln Val Phe His Ile Ser Cys Phe Arg Cys	
402 407 412 417	
tcc tat tgc aac aac aaa ctc agt cta gga aca tat gca tct tta cat	1471
Ser Tyr Cys Asn Asn Lys Leu Ser Leu Gly Thr Tyr Ala Ser Leu His	
418 423 428 433	
gga aga atc tat tgt aag cct cac ttc aat caa ctc ttt aaa tct aag	1519
Gly Arg Ile Tyr Cys Lys Pro His Phe Asn Gln Leu Phe Lys Ser Lys	
434 439 444 449	
ggc aac tat gat gaa ggc ttt ggg cac aga cca cac aag gat cta tgg	1567
Gly Asn Tyr Asp Glu Gly Phe Gly His Arg Pro His Lys Asp Leu Trp	
450 455 460 465	
gca agc aaa aat gaa aac gaa gag att ttg gag aga cca gcc cag ctt	1615
Ala Ser Lys Asn Glu Asn Glu Glu Ile Leu Glu Arg Pro Ala Gln Leu	
466 471 476 481	
gca aat gca agg gag acc cct cac agc cca ggg gta gaa gat gcc cct	1663
Ala Asn Ala Arg Glu Thr Pro His Ser Pro Gly Val Glu Asp Ala Pro	
482 487 492 497	
att gct aag gtg ggt gtc ctg gct gca agt atg gaa gcc aag gcc tcc	1711
Ile Ala Lys Val Gly Val Leu Ala Ala Ser Met Glu Ala Lys Ala Ser	
498 503 508 513	
tct cag cag gag aag gaa gac aag cca gct gaa acc aag aag ctg agg	1759
Ser Gln Gln Glu Lys Glu Asp Lys Pro Ala Glu Thr Lys Lys Leu Arg	
514 519 524 529	
atc gcc tgg cca ccc ccc act gaa ctt gga agt tca gga agt gcc ttg	1807
Ile Ala Trp Pro Pro Pro Thr Glu Leu Gly Ser Ser Gly Ser Ala Leu	
530 535 540 545	
gag gaa ggg atc aaa atg tca aag ccc aaa tgg cct cct gaa gac gaa	1855
Glu Glu Gly Ile Lys Met Ser Lys Pro Lys Trp Pro Pro Glu Asp Glu	
546 551 556 561	
atc agc aag ccc gaa gtt cct gag gat gtc gat cta gat ctg aag aag	1903
Ile Ser Lys Pro Glu Val Pro Glu Asp Val Asp Leu Asp Leu Lys Lys	
562 567 572 577	
cta aga cga tct tct tca ctg aag gaa aga agc cgc cca ttc act gta	1951
Leu Arg Arg Ser Ser Ser Leu Lys Glu Arg Ser Arg Pro Phe Thr Val	
578 583 588 593	
gca gct tca ttt caa agc acc tct gtc aag agc cca aaa act gtg tcc	1999
Ala Ala Ser Phe Gln Ser Thr Ser Val Lys Ser Pro Lys Thr Val Ser	
594 599 604 609	
cca cct atc agg aaa ggc tgg agc atg tca gag cag agt gaa gag tct	2047
Pro Pro Ile Arg Lys Gly Trp Ser Met Ser Glu Gln Ser Glu Glu Ser	
610 615 620 625	

gtg ggt gga aga gtt gca gaa agg aaa caa gtg gaa aat gcc aag gct Val Gly Gly Arg Val Ala Glu Arg Lys Gln Val Glu Asn Ala Lys Ala 626 631 636 641	2095
tct aag aag aat ggg aat gtg gga aaa aca acc tgg caa aac aaa gaa Ser Lys Lys Asn Gly Asn Val Gly Lys Thr Thr Trp Gln Asn Lys Glu 642 647 652 657	2143
tct aaa gga gag aca ggg aag aga agt aag gaa ggt cat agt ttg gag Ser Lys Gly Glu Thr Gly Lys Arg Ser Lys Glu Gly His Ser Leu Glu 658 663 668 673	2191
atg gag aat gag aat ctt gta gaa aat ggt gca gac tcc gat gaa gat Met Glu Asn Glu Asn Leu Val Glu Asn Gly Ala Asp Ser Asp Glu Asp 674 679 684 689	2239
gat aac agc ttc ctc aaa caa caa tct cca caa gaa ccc aag tct ctg Asp Asn Ser Phe Leu Lys Gln Gln Ser Pro Gln Glu Pro Lys Ser Leu 690 695 700 705	2287
aat tgg tcg agt ttt gta gac aac acc ttt gct gaa gaa ttc act act Asn Trp Ser Ser Phe Val Asp Asn Thr Phe Ala Glu Glu Phe Thr Thr 706 711 716 721	2335
cag aat cag aaa tcc cag gat gtg gaa ctc tgg gag gga gaa gtg gtc Gln Asn Gln Lys Ser Gln Asp Val Glu Leu Trp Glu Gly Glu Val Val 722 727 732 737	2383
aaa gag ctc tct gtg gaa gaa cag ata aag aga aat cgg tat tat gat Lys Glu Leu Ser Val Glu Glu Gln Ile Lys Arg Asn Arg Tyr Tyr Asp 738 743 748 753	2431
gag gat gag gat gaa gag tga ca aattgcaatg atgctggggcc ttaaattcat Glu Asp Glu Asp Glu Glu * 754 759	2484
gtagtggtta gcgagccact gccctttgtc aaaatgtgat gcacataagc aggtatccca	2544
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acggtcacac cgcggcgaat taattcccaa agactc   atg tta cat gag aaa gcc      174
                                   Met Leu His Glu Lys Ala
                                   1

acc aag aag acc aaa gaa aag gag aca agg atg gct ctt cct cag gga      222
Thr Lys Lys Thr Lys Glu Lys Glu Thr Arg Met Ala Leu Pro Gln Gly
   7                               12                               17                               22

tgc ttg act ttc aag gat gtg gct ata gaa ttc tct ttg gag gag tgg      270
Cys Leu Thr Phe Lys Asp Val Ala Ile Glu Phe Ser Leu Glu Glu Trp
  23                               28                               33                               38

aaa tgc ctg aac cct gca cag agg gct tta tac agg gcc gtg atg ttg      318
Lys Cys Leu Asn Pro Ala Gln Arg Ala Leu Tyr Arg Ala Val Met Leu
  39                               44                               49                               54

gag aac tac agg aac ctg gag tct gtg gga ttg act tct aag gac tct      366
Glu Asn Tyr Arg Asn Leu Glu Ser Val Gly Leu Thr Ser Lys Asp Ser
  55                               60                               65                               70

tgg tac atg agg aag aaa ccc gga agg gga aga gga aag caa agg cgt      414
Trp Tyr Met Arg Lys Lys Pro Gly Arg Gly Arg Gly Lys Gln Arg Arg
  71                               76                               81                               86

cag gaa tgg ttc ttc ctc agg gtc tat tga c attcagggat gtggccatag      465
Gln Glu Trp Phe Phe Leu Arg Val Tyr  *
  87                               92

aattctctca ggaggagtgg aaatgcctgg accctgctca gaggactcta tacagagatg      525

tgatgttgga gaaatatagg aaccggggct ccctgggatt ttttctaaat gtgagacaag      585

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                  Met Ser Gln
                  1

ctg gtg gaa tgc gtc ccc aac ttt tgc gag ggg aag aac cag gag gtg      163
Leu Val Glu Cys Val Pro Asn Phe Ser Glu Gly Lys Asn Gln Glu Val
   4                      9                      14          19

atc gac gcc atc tct gga gcc atc aca cag acc ccg ggc tgc gtg ctg      211
Ile Asp Ala Ile Ser Gly Ala Ile Thr Gln Thr Pro Gly Cys Val Leu
  20                      25                      30          35

ctg gat gtg gac gca ggc cct tcc acc aac cgc acc gtg tac acc ttc      259
Leu Asp Val Asp Ala Gly Pro Ser Thr Asn Arg Thr Val Tyr Thr Phe
  36                      41                      46          51

gtg ggg ccg ccg gag tgc gtg gtg gag ggg gcc ctc aac gct gcc cgg      307
Val Gly Pro Pro Glu Cys Val Val Glu Gly Ala Leu Asn Ala Ala Arg
  52                      57                      62          67

gta gct tcc cga ctt atc gac atg agc agg cac caa gga gag cac ccc      355
Val Ala Ser Arg Leu Ile Asp Met Ser Arg His Gln Gly Glu His Pro
  68                      73                      78          83

cgc atg ggg gcc cta gac gtc tgc ccc ttc atc ccc gtg agg ggc gtc      403
Arg Met Gly Ala Leu Asp Val Cys Pro Phe Ile Pro Val Arg Gly Val
  84                      89                      94          99

agc gtg gat gag tgt gtg ctc tgc gcc cag gcc ttt ggc cag agg ctg      451
Ser Val Asp Glu Cys Val Leu Cys Ala Gln Ala Phe Gly Gln Arg Leu
 100                      105                      110          115

gca gag gag ctg gac gtg cca ggc ctg acc gcc ggg ctc tcc tgc agt      499
Ala Glu Glu Leu Asp Val Pro Gly Leu Thr Ala Gly Leu Ser Cys Ser
 116                      121                      126          131

tac ctg tac ggc gag gca gcc agg atg gac agt cgc cgg acc ctg ccg      547
Tyr Leu Tyr Gly Glu Ala Ala Arg Met Asp Ser Arg Arg Thr Leu Pro
 132                      137                      142          147

gcc atc cgg gcc ggg gag tac gag gcc ctc cct aag aag ctc cag cag      595
Ala Ile Arg Ala Gly Glu Tyr Glu Ala Leu Pro Lys Lys Leu Gln Gln
 148                      153                      158          163

gcc gac tgg gcg ccc gac ttt ggt ccc agc tcc ttt gtc ccc agt tgg      643
Ala Asp Trp Ala Pro Asp Phe Gly Pro Ser Ser Phe Val Pro Ser Trp
 164                      169                      174          179

ggg gcc acg gcc acg ggg gcg agg aag ttc ctc att gct ttt aac atc      691
Gly Ala Thr Ala Thr Gly Ala Arg Lys Phe Leu Ile Ala Phe Asn Ile

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180	185	190	195	
aac ctg ctc ggc aca aag gag caa gcc cac cgc atc gcg ctc aac ctg				739
Asn Leu Leu Gly Thr Lys Glu Gln Ala His Arg Ile Ala Leu Asn Leu				
196	201	206	211	
cgg gag cag ggc cgc ggg aag gac cag cca gga cgt ctg aag aaa gtt				787
Arg Glu Gln Gly Arg Gly Lys Asp Gln Pro Gly Arg Leu Lys Lys Val				
212	217	222	227	
cag ggc ttt ggc tgg tac ctg gat gag aag aac ctg gct cag gtg tcc				835
Gln Gly Phe Gly Trp Tyr Leu Asp Glu Lys Asn Leu Ala Gln Val Ser				
228	233	238	243	
acc aat ctt ctg gac ttt gag gtc acg gca ctg cac acg gtc tac gag				883
Thr Asn Leu Leu Asp Phe Glu Val Thr Ala Leu His Thr Val Tyr Glu				
244	249	254	259	
gag acc tgc cga gaa gca cag gag ctg agc ctc cca gtg gtg ggc tca				931
Glu Thr Cys Arg Glu Ala Gln Glu Leu Ser Leu Pro Val Val Gly Ser				
260	265	270	275	
cag ctg gtg ggc ctg gtg ccc ctg aag gct ctg ctg gat gcg gcc gcc				979
Gln Leu Val Gly Leu Val Pro Leu Lys Ala Leu Leu Asp Ala Ala Ala				
276	281	286	291	
ttc tac tgc gag aag gag aac ctc ttc atc ctg gag gag gag cag cgg				1027
Phe Tyr Cys Glu Lys Glu Asn Leu Phe Ile Leu Glu Glu Glu Gln Arg				
292	297	302	307	
atc agg ctg gtg gtg agc cgg ctg ggc ctg gac tcc ctg tgc ccc ttc				1075
Ile Arg Leu Val Val Ser Arg Leu Gly Leu Asp Ser Leu Cys Pro Phe				
308	313	318	323	
agc cct aag gag cgg atc atc gag tac ctg gtc cct gag cgc ggg cct				1123
Ser Pro Lys Glu Arg Ile Ile Glu Tyr Leu Val Pro Glu Arg Gly Pro				
324	329	334	339	
gag cga ggc ctg ggc agc aag tcc ctg cgc gcc ttc gtg ggg gag gtg				1171
Glu Arg Gly Leu Gly Ser Lys Ser Leu Arg Ala Phe Val Gly Glu Val				
340	345	350	355	
ggt gcc cgc tct gcg gcc ccc ggg ggc ggc tgc gtg gcg gcg gcc gct				1219
Gly Ala Arg Ser Ala Ala Pro Gly Gly Gly Ser Val Ala Ala Ala Ala				
356	361	366	371	
gcg gcc atg ggt gcg gcg ctg ggc tcc atg gtg ggc ctc atg acc tac				1267
Ala Ala Met Gly Ala Ala Leu Gly Ser Met Val Gly Leu Met Thr Tyr				
372	377	382	387	
ggg cgg cgc caa ttc cag tcc ctg gac acg acg atg cgg cgc ctg atc				1315
Gly Arg Arg Gln Phe Gln Ser Leu Asp Thr Thr Met Arg Arg Leu Ile				
388	393	398	403	
ccg ccc ttc cgc gag gct tgc gcc aag cta acc acg ctg gtg gat gcc				1363
Pro Pro Phe Arg Glu Ala Ser Ala Lys Leu Thr Thr Leu Val Asp Ala				
404	409	414	419	

gac gcc gag gcc ttc acc gcc tac ctg gaa gca atg agg ctc ccc aag	1411
Asp Ala Glu Ala Phe Thr Ala Tyr Leu Glu Ala Met Arg Leu Pro Lys	
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aac aca cct gag gaa aag gac agg cgc acg gcg gcc cta cag gag ggt	1459
Asn Thr Pro Glu Glu Lys Asp Arg Arg Thr Ala Ala Leu Gln Glu Gly	
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Leu Arg Arg Ala Val Ser Val Pro Leu Thr Leu Ala Glu Thr Val Ala	
452 457 462 467	
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Ser Leu Trp Pro Ala Leu Gln Glu Leu Ala Arg Cys Gly Asn Leu Ala	
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tgc cgg tca gac ctc cag gtg gcg gcc aaa gcc ctg gag atg ggc gtg	1603
Cys Arg Ser Asp Leu Gln Val Ala Ala Lys Ala Leu Glu Met Gly Val	
484 489 494 499	
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Phe Gly Ala Tyr Phe Asn Val Leu Ile Asn Leu Arg Asp Ile Thr Asp	
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Glu Ala Phe Lys Asp Gln Ile His His Arg Val Ser Ser Leu Leu Gln	
516 521 526 531	
gaa gcc aag acc cag gct gca ctg gtg ctg gac tgc ttg gag acc cgg	1747
Glu Ala Lys Thr Gln Ala Ala Leu Val Leu Asp Cys Leu Glu Thr Arg	
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Gln Glu *	
548	
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tacatgccgg atttaccgca aggaccgtaa tcatccgata tgcgttaccg aatggatgga 180  
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ttcccagata ttccgcccgc acattcgtgc atcgtcagaa ctgacacagg ccgaagcagt 540  
aaaagctctt ggattcctga aacagaaagc cgcagagcag aaggtggcag c atg aca 597  
Met Thr  
1

ccg gac att atc ctg cag cgt acc ggg atc gat gtg aga gct gtc gaa 645  
Pro Asp Ile Ile Leu Gln Arg Thr Gly Ile Asp Val Arg Ala Val Glu  
3 8 13 18

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Gln Gly Glu Asp Ala Trp His Lys Leu Arg Leu Gly Val Ile Thr Ala  
19 24 29 34

tca gaa gtt cac aac gtg ata gca aaa ccc cgc tcc gga aag aag tgg 741  
Ser Glu Val His Asn Val Ile Ala Lys Pro Arg Ser Gly Lys Lys Trp  
35 40 45 50

cct gac atg aaa atg tcc tac ttc cac acc ctg ctt gct gag gtt tgc 789  
Pro Asp Met Lys Met Ser Tyr Phe His Thr Leu Leu Ala Glu Val Cys  
51 56 61 66

acc ggt gtg gct ccg gaa gtt aac gct aaa gca ctg gcc tgg gga aaa 837  
Thr Gly Val Ala Pro Glu Val Asn Ala Lys Ala Leu Ala Trp Gly Lys

67

72

77

82

cag tac gag aac gac gcc aga acc ctg ttt gaa ttt act tcc ggc gtg	885
Gln Tyr Glu Asn Asp Ala Arg Thr Leu Phe Glu Phe Thr Ser Gly Val	
83 88 93 98	
aat gtt act gaa tcc ccg atc atc tat cgc gac gaa agt atg cgt acc	933
Asn Val Thr Glu Ser Pro Ile Ile Tyr Arg Asp Glu Ser Met Arg Thr	
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gcc tgc tct ccc gat ggt tta tgc agt gac ggc aac ggc ctt gaa ctg	981
Ala Cys Ser Pro Asp Gly Leu Cys Ser Asp Gly Asn Gly Leu Glu Leu	
115 120 125 130	
aaa tgc ccg ttt acc tcc cgg gat ttc atg aag ttc cgg ctc ggt ggt	1029
Lys Cys Pro Phe Thr Ser Arg Asp Phe Met Lys Phe Arg Leu Gly Gly	
131 136 141 146	
ttc gag gcc ata aag tca gct tac atg gcc cag gtg cag tac agc atg	1077
Phe Glu Ala Ile Lys Ser Ala Tyr Met Ala Gln Val Gln Tyr Ser Met	
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Trp Val Thr Arg Lys Asn Ala Trp Tyr Phe Ala Asn Tyr Asp Pro Arg	
163 168 173 178	
atg aag cgt gaa ggc ctg cat tat gtc gtg att gag cgg gat gaa aag	1173
Met Lys Arg Glu Gly Leu His Tyr Val Val Ile Glu Arg Asp Glu Lys	
179 184 189 194	
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Tyr Met Ala Ser Phe Asp Glu Ile Val Pro Glu Phe Ile Glu Lys Met	
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gac gag gca ctg gct gaa att ggt ttt gta ttt ggg gag caa tgg cga	1269
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*	
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tgcatttttc tggcagcggg cttcatattc tgtgtgctta tgcttgccga catgggactt	1686
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aaatcaaaaa aagccagaca gcagtttccg gataaaaacg tcgatgacat ttgccgtagc	1806

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 ctggcaatcg gcatgttaaa cggcgtcttt aaggaacgat gaacatgaaa agcaaaatca 1926  
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 agttcagggga ttaatgaaag atggcagaca tcattgattc agcatcagaa atagaagaat 2046  
 tacagcgcaa cacagcaata aaaatgcgcc gcctgaacca ccaggctata tctgccactc 2106  
 attgttgtga gtgtggcgat ccgatagatg aacgaagacg cctggtcggt cagggttgtc 2166  
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 tgcgctaaca gtagggaaac tgcgtgttga gcttgaaaca gcaaaatcaa aactcaacga 2466  
 gcagcgtgag tattacgaag gtgttatctc ggatgggagt aagacgaaat cgtcgacccg 2526  
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 tgagtogaat g 2597

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 <212> DNA  
 <213> Homo sapiens

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 <222> (69)..(1727)

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 Met Met Lys Lys Thr Leu Lys Cys Ile Arg Trp Ser Leu Pro  
 1 5 10  
 gaa atg gcc agc atc ggg ctg ctg ctg gcc atc cac ctg tgc ctc ttc 158  
 Glu Met Ala Ser Ile Gly Leu Leu Leu Ala Ile His Leu Cys Leu Phe  
 15 20 25 30  
 acc atg ttc gga atg ctg ctg ttc gct gga ggg aag cag gat gat ggg 206  
 Thr Met Phe Gly Met Leu Leu Phe Ala Gly Gly Lys Gln Asp Asp Gly  
 31 36 41 46  
 cag gac agg gag agg ctg acc tac ttc cag aac ctg cct gag tct ctg 254

Gln	Asp	Arg	Glu	Arg	Leu	Thr	Tyr	Phe	Gln	Asn	Leu	Pro	Glu	Ser	Leu		
47					52					57					62		
act	tcc	ctc	ctg	gtg	ctg	ctg	acc	acg	gcc	aac	aac	ccc	gat	gtg	atg	302	
Thr	Ser	Leu	Leu	Val	Leu	Leu	Thr	Thr	Ala	Asn	Asn	Pro	Asp	Val	Met		
63					68					73					78		
att	cct	gcg	tat	tcc	aag	aac	cgg	gcc	tat	gcc	atc	ttc	ttc	ata	gtc	350	
Ile	Pro	Ala	Tyr	Ser	Lys	Asn	Arg	Ala	Tyr	Ala	Ile	Phe	Phe	Ile	Val		
79					84					89					94		
ttc	act	gtg	ata	gga	agc	ctg	ttt	ctg	atg	aac	ctg	ctg	aca	gcc	atc	398	
Phe	Thr	Val	Ile	Gly	Ser	Leu	Phe	Leu	Met	Asn	Leu	Leu	Thr	Ala	Ile		
95					100					105					110		
atc	tac	agt	cag	ttc	cgg	ggc	tac	ctg	atg	aaa	tct	ctc	cag	acc	tcg	446	
Ile	Tyr	Ser	Gln	Phe	Arg	Gly	Tyr	Leu	Met	Lys	Ser	Leu	Gln	Thr	Ser		
111					116					121					126		
ctg	ttt	cgg	agg	cgg	ctg	gga	acc	cgg	gct	gcc	ttt	gaa	gtc	cta	tcc	494	
Leu	Phe	Arg	Arg	Arg	Leu	Gly	Thr	Arg	Ala	Ala	Phe	Glu	Val	Leu	Ser		
127					132					137					142		
tcc	atg	gtg	ggg	gag	gga	gga	gcc	ttc	cct	cag	gca	gtt	ggg	gtg	aag	542	
Ser	Met	Val	Gly	Glu	Gly	Gly	Ala	Phe	Pro	Gln	Ala	Val	Gly	Val	Lys		
143					148					153					158		
ccc	cag	aac	ttg	ctg	cag	gtg	ctt	cag	aag	gtc	cag	ctg	gac	agc	tcc	590	
Pro	Gln	Asn	Leu	Leu	Gln	Val	Leu	Gln	Lys	Val	Gln	Leu	Asp	Ser	Ser		
159					164					169					174		
cac	aaa	cag	gcc	atg	atg	gag	aag	gtg	cgt	tcc	tac	ggc	agt	gtt	ctg	638	
His	Lys	Gln	Ala	Met	Met	Glu	Lys	Val	Arg	Ser	Tyr	Gly	Ser	Val	Leu		
175					180					185					190		
ctg	tca	gct	gag	gag	ttt	cag	aag	ctc	ttc	aac	gag	ctt	gac	aga	agt	686	
Leu	Ser	Ala	Glu	Glu	Phe	Gln	Lys	Leu	Phe	Asn	Glu	Leu	Asp	Arg	Ser		
191					196					201					206		
gtg	gtt	aaa	gag	cac	ccg	ccg	agg	ccc	gag	tac	cag	tct	ccg	ttt	ctg	734	
Val	Val	Lys	Glu	His	Pro	Pro	Arg	Pro	Glu	Tyr	Gln	Ser	Pro	Phe	Leu		
207					212					217					222		
cag	agc	gcc	cag	ttc	ctc	ttc	ggc	cac	tac	tac	ttt	gac	tac	ctg	ggg	782	
Gln	Ser	Ala	Gln	Phe	Leu	Phe	Gly	His	Tyr	Tyr	Phe	Asp	Tyr	Leu	Gly		
223					228					233					238		
aac	ctc	atc	gcc	ctg	gca	aac	ctg	gtg	tcc	att	tgc	gtg	ttc	ctg	gtg	830	
Asn	Leu	Ile	Ala	Leu	Ala	Asn	Leu	Val	Ser	Ile	Cys	Val	Phe	Leu	Val		
239					244					249					254		
ctg	gat	gca	gat	gtg	ctg	cct	gct	gag	cgt	gat	gac	ttc	atc	ctg	ggg	878	
Leu	Asp	Ala	Asp	Val	Leu	Pro	Ala	Glu	Arg	Asp	Asp	Phe	Ile	Leu	Gly		
255					260					265					270		
att	ctc	aac	tgc	gtc	ttc	att	gtg	tac	tac	ctg	ttg	gag	atg	ctg	ctc	926	
Ile	Leu	Asn	Cys	Val	Phe	Ile	Val	Tyr	Tyr	Leu	Leu	Glu	Met	Leu	Leu		

271	276	281	286	
aag gtc ttt gcc ctg ggc ctg cga ggg tac ctg tcc tac ccc agc aac				974
Lys Val Phe Ala Leu Gly Leu Arg Gly Tyr Leu Ser Tyr Pro Ser Asn				
287	292	297	302	
gtg ttt gac ggg ctc ctc acc gtt gtc ctg ctg gtt ttg gag atc tca				1022
Val Phe Asp Gly Leu Leu Thr Val Val Leu Leu Val Leu Glu Ile Ser				
303	308	313	318	
act ctg gct gtg tac cga ttg cca cac cca ggc tgg agg ccg gag atg				1070
Thr Leu Ala Val Tyr Arg Leu Pro His Pro Gly Trp Arg Pro Glu Met				
319	324	329	334	
gtg ggc ctg ctg tcg ctg tgg gac atg acc cgc atg ctg aac atg ctc				1118
Val Gly Leu Leu Ser Leu Trp Asp Met Thr Arg Met Leu Asn Met Leu				
335	340	345	350	
atc gtg ttc cgc ttc ctg cgt atc atc ccc agc atg aag ccg atg gcc				1166
Ile Val Phe Arg Phe Leu Arg Ile Ile Pro Ser Met Lys Pro Met Ala				
351	356	361	366	
gtg gtg gcc agt acc gtc ctg ggc ctg gtg cag aac atg cgt gcg ttt				1214
Val Val Ala Ser Thr Val Leu Gly Leu Val Gln Asn Met Arg Ala Phe				
367	372	377	382	
ggc ggg atc ctg gtg gtg gtc tac tac gta ttt gcc atc att ggg atc				1262
Gly Gly Ile Leu Val Val Val Tyr Tyr Val Phe Ala Ile Ile Gly Ile				
383	388	393	398	
aac ttg ttt aga ggc gtc att gtg gct ctt cct gga aac agc agc ctg				1310
Asn Leu Phe Arg Gly Val Ile Val Ala Leu Pro Gly Asn Ser Ser Leu				
399	404	409	414	
gcc cct gcc aat ggc tcg gcg ccc tgt ggg agc ttc gag cag ctg gag				1358
Ala Pro Ala Asn Gly Ser Ala Pro Cys Gly Ser Phe Glu Gln Leu Glu				
415	420	425	430	
tac tgg gcc aac aac ttc gat gac ttt gcg gct gcc ctg gtc act ctg				1406
Tyr Trp Ala Asn Asn Phe Asp Asp Phe Ala Ala Ala Leu Val Thr Leu				
431	436	441	446	
tgg aac ttg atg gtg gtg aac aac tgg cag gtg ttt ctg gat gca tat				1454
Trp Asn Leu Met Val Val Asn Asn Trp Gln Val Phe Leu Asp Ala Tyr				
447	452	457	462	
cgg cgc tac tca ggc ccg tgg tcc aag atc tat ttt gta ttg tgg tgg				1502
Arg Arg Tyr Ser Gly Pro Trp Ser Lys Ile Tyr Phe Val Leu Trp Trp				
463	468	473	478	
ctg gtg tcg tct gtc atc tgg gtc aac ctg ttt ctg gcc ctg att ctg				1550
Leu Val Ser Ser Val Ile Trp Val Asn Leu Phe Leu Ala Leu Ile Leu				
479	484	489	494	
gag aac ttc ctt cac aag tgg gac ccc cgc agc cac ctg cag ccc ctt				1598
Glu Asn Phe Leu His Lys Trp Asp Pro Arg Ser His Leu Gln Pro Leu				
495	500	505	510	

gct ggg acc cca gag gcc acc tac cag atg act gtg gag ctc ctg ttc	1646
Ala Gly Thr Pro Glu Ala Thr Tyr Gln Met Thr Val Glu Leu Leu Phe	
511 516 521 526	
agg gat att ctg gag gag ccc gag gag gat gag ctc aca gag agg ctg	1694
Arg Asp Ile Leu Glu Glu Pro Glu Glu Asp Glu Leu Thr Glu Arg Leu	
527 532 537 542	
agc cag cac ccg cac ctg tgg ctg tgc agg tga cgtccggg ctgccgtccc	1745
Ser Gln His Pro His Leu Trp Leu Cys Arg *	
543 548 553	
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catgctgtgg ccagccaggc aggaagagac ctttctctg acggaccact aagctgggga	1865
caggaaccaa gtcctttgcg tgtggcccaa caaccatcta cagaacagct gctggtgctt	1925
cagggaggcg ccgtgccctc cgctttcttt tatagctgct tcagtgagaa ttccctcgtc	1985
gactccacag ggacctttca gacaaaaatg caagaagcag cggcctcccc tgtccctgac	2045
agcttccgtg gtgcctttgc tgccggcagc ccttggggac cacaggcctg accagggcct	2105
gcacaggtta accgtcagac ttccggggca ttcagggtgg gatgctggtg gtttgacatg	2165
gagagaacct tgactgtgtt ttattatttc atggcttgta tgagtgtgac tgggtgtgtt	2225
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a	2286

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 <212> DNA  
 <213> Homo sapiens  
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gtcaagcaat agtgaaccaa aatgcagaga cagaacttat gctggaagga gacgatgatg	180
cagtcagtct gctacaggag aaagaaattg acaacpttgc aggccagtg gttctcagca	240
cccctgccca gctcatcgct cccgtgggtg tggccaaggg gactctctcc atcaccacga	300
cagaaatcta cttcgaggta gatgaggatg actctgcctt caagaagatc gacacgaaag	360



ttcttgcata cactgagga cttcacgga aatggatgtt cagcgagata cgagctgtat	420
tttcaagacg ttaccttcta caaaacactg ctttggaagt atttatggca aaccgaacct	480
cagttatgtt taatttcctt gatcaagcaa cagtaaaaaa agttgtctat agcttgccctc	540
gggttgaggat agggaccagc tatgggtctgc cacaagccag gaggatatca ttggccactc	600
ctcgacagct ttataaattt ccaat atg act cag cgc tgg caa aga agg gaa	652
Met Thr Gln Arg Trp Gln Arg Arg Glu	
1 5	
att tca aac ttc gaa tat ttg atg ttc ctt aat act att gca gga cgg	700
Ile Ser Asn Phe Glu Tyr Leu Met Phe Leu Asn Thr Ile Ala Gly Arg	
10 15 20 25	
aca tat aat gat ctg aac caa tat cca gtg ttt ccg tgg gtg tta acc	748
Thr Tyr Asn Asp Leu Asn Gln Tyr Pro Val Phe Pro Trp Val Leu Thr	
26 31 36 41	
aac tat gaa tca gaa gag ttg gac ctg act ctt cca gga aac ttc agg	796
Asn Tyr Glu Ser Glu Glu Leu Asp Leu Thr Leu Pro Gly Asn Phe Arg	
42 47 52 57	
gat cta tca aag cca att ggt gct ttg aac ccc aag aga gct gtg ttt	844
Asp Leu Ser Lys Pro Ile Gly Ala Leu Asn Pro Lys Arg Ala Val Phe	
58 63 68 73	
tat gca gag cgt tat gag aca tgg gaa gat gat caa agc cca ccc tac	892
Tyr Ala Glu Arg Tyr Glu Thr Trp Glu Asp Asp Gln Ser Pro Pro Tyr	
74 79 84 89	
cat tat aat acc cat tat tca aca gca aca tct act tta tcc tgg ctt	940
His Tyr Asn Thr His Tyr Ser Thr Ala Thr Ser Thr Leu Ser Trp Leu	
90 95 100 105	
gtt cga att gaa cct ttc aca acc ttc ttc ctc aat gca aat gat gga	988
Val Arg Ile Glu Pro Phe Thr Thr Phe Phe Leu Asn Ala Asn Asp Gly	
106 111 116 121	
aaa ttt gat cat cca gat cga acc ttc tca tcc gtt gca agg tct tgg	1036
Lys Phe Asp His Pro Asp Arg Thr Phe Ser Ser Val Ala Arg Ser Trp	
122 127 132 137	
aga act agt cag aga gat act tct gat gta aag gaa cta att cca gag	1084
Arg Thr Ser Gln Arg Asp Thr Ser Asp Val Lys Glu Leu Ile Pro Glu	
138 143 148 153	
ttc tac tac cta cca gag atg ttt gtc aac agt aat gga tat aat ctt	1132
Phe Tyr Tyr Leu Pro Glu Met Phe Val Asn Ser Asn Gly Tyr Asn Leu	
154 159 164 169	
gga gtc aga gaa gat gaa gta gtg gta aat gat gtt gat ctt ccc cct	1180
Gly Val Arg Glu Asp Glu Val Val Val Asn Asp Val Asp Leu Pro Pro	
170 175 180 185	

tgg gca aaa aaa cct gaa gac ttt gtg cgg atc aac agg atg gcc cta	1228
Trp Ala Lys Lys Pro Glu Asp Phe Val Arg Ile Asn Arg Met Ala Leu	
186 191 196 201	
gaa agt gaa ttt gtt tct tgc caa ctt cat cag tgg atc gac ctt ata	1276
Glu Ser Glu Phe Val Ser Cys Gln Leu His Gln Trp Ile Asp Leu Ile	
202 207 212 217	
ttt ggc tat aag cag cga gga cca gaa gca gtt cgt gct ctg aat gtt	1324
Phe Gly Tyr Lys Gln Arg Gly Pro Glu Ala Val Arg Ala Leu Asn Val	
218 223 228 233	
ttt cac tac ttg act tat gaa ggc tct gtg aac ctg gat agt atc act	1372
Phe His Tyr Leu Thr Tyr Glu Gly Ser Val Asn Leu Asp Ser Ile Thr	
234 239 244 249	
gat cct gtg ctc agg gag gcc atg gag gca cag ata cag aac ttt gga	1420
Asp Pro Val Leu Arg Glu Ala Met Glu Ala Gln Ile Gln Asn Phe Gly	
250 255 260 265	
cag acg cca tct cag ttg ctt att gag cca cat ccg cct cgg agc tct	1468
Gln Thr Pro Ser Gln Leu Leu Ile Glu Pro His Pro Pro Arg Ser Ser	
266 271 276 281	
gcc atg cac ctg tgt ttc ctt cca cag agt ccg ctc atg ttt aaa gat	1516
Ala Met His Leu Cys Phe Leu Pro Gln Ser Pro Leu Met Phe Lys Asp	
282 287 292 297	
cag atg caa cag gat gtg ata atg gtg ctg aag ttt cct tca aat tct	1564
Gln Met Gln Gln Asp Val Ile Met Val Leu Lys Phe Pro Ser Asn Ser	
298 303 308 313	
cca gta acc cat gtg gca gcc aac act ctg ccc cac ttg acc atc ccc	1612
Pro Val Thr His Val Ala Ala Asn Thr Leu Pro His Leu Thr Ile Pro	
314 319 324 329	
gca gtg gtg aca gtg act tgc agc cga ctc ttt gca gtg aat aga tgg	1660
Ala Val Val Thr Val Thr Cys Ser Arg Leu Phe Ala Val Asn Arg Trp	
330 335 340 345	
cac aac aca gta ggc ctc aga gga gct cca gga tac tcc ttg gat caa	1708
His Asn Thr Val Gly Leu Arg Gly Ala Pro Gly Tyr Ser Leu Asp Gln	
346 351 356 361	
gcc cac cat ctt ccc att gaa atg gat cca tta ata gcc aat aat tca	1756
Ala His His Leu Pro Ile Glu Met Asp Pro Leu Ile Ala Asn Asn Ser	
362 367 372 377	
ggt gta aac aaa cgg cag atc aca gac ctc gtt gac cag agt ata caa	1804
Gly Val Asn Lys Arg Gln Ile Thr Asp Leu Val Asp Gln Ser Ile Gln	
378 383 388 393	
atc aat gca cat tgt ttt gtg gta aca gca gat aat cgc tat att ctt	1852
Ile Asn Ala His Cys Phe Val Val Thr Ala Asp Asn Arg Tyr Ile Leu	
394 399 404 409	
atc tgt gga ttc tgg gat aag agc ttc aga gtt tat tct aca gaa aca	1900



634	639	644	649	
gat ttt aat cgg tgg cat tat gag cat cag aac aga tac tga agataaa				2621
Asp Phe Asn Arg Trp His Tyr Glu His Gln Asn Arg Tyr *				
650	655	660		

ggaagaacca aaagccaagt taaagctgag agcacaagtg ctgcatggaa aggcaatatc	2681
tctggtggaa aaaactcgtc tacatcgacc tccgtttgta cattccatca caccagcaa	2741
tagctgtaca ttgtagtcag caaccatttt actttgtgtg ttttttcacg actgaacacc	2801
agctgctatc aagcaagctt atatcatgta aattatatga attaggagat gttttggtaa	2861
ttatttcata tattgttggt tattgagaaa aggttgtagg atgtgtcaca agagactttt	2921
gacaattctg aggaaccttg tgtccagttg ttacaaagtt taagctttga acctaacctg	2981
catccccattt ccagcctctt ttcaagctga gaaaaaaaaa aaaaaacacg tttgatactt	3041
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agaaaaaaaaaaa aaa	3114

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 <222> (58) .. (336)

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atg tac ata aag cca tct acc agg aaa tca ggc tac tca cct cag cag				105
Met Tyr Ile Lys Pro Ser Thr Arg Lys Ser Gly Tyr Ser Pro Gln Gln				
1	5	10	15	
gta gct gtg atc cac tgc aaa gga cat caa aaa gaa aac acg gcc gtt				153
Val Ala Val Ile His Cys Lys Gly His Gln Lys Glu Asn Thr Ala Val				
17	22	27	32	
gcc cat agt aac cag aaa gct gat tca gca gct cag gtc act gcc aga				201
Ala His Ser Asn Gln Lys Ala Asp Ser Ala Ala Gln Val Thr Ala Arg				
33	38	43	48	
ctt tca gtc acg cct cca aac ttg ctg ccc aca gtc tcc ttt cca cag				249
Leu Ser Val Thr Pro Pro Asn Leu Leu Pro Thr Val Ser Phe Pro Gln				
49	54	59	64	
cca gat ctg cct gac aat ccc gta tac tca aca aca aca gaa aaa ctg				297
Pro Asp Leu Pro Asp Asn Pro Val Tyr Ser Thr Thr Thr Glu Lys Leu				
65	70	75	80	

gct tca gat ctg aga gcc aat aaa aat cag gaa agt tag tagattcttc 346  
 Ala Ser Asp Leu Arg Ala Asn Lys Asn Gln Glu Ser \*  
 81 86 91

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taagaagagc aaagttacct cagctcctcc ggaggg 442

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 <222> (1890)..(2096)

<220>  
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 ctctctcact ctctcactca ttctctcttg cactttgtct tcggagctca ttgccatgga 300  
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 ccacgtctca ctcttactt ccttcctgca ttcatagcat ccttccttcc tgcttgctct 420  
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tctcatatcc tttcatctaa cagacctcag tgcccaggac tggatgactc aaaacccctc	960
acaacatctt gtcacctggc gctgcactcc cactgctcat tcatccatcc acacacgcaa	1020
tgtagacttt ttggcctttt tttctttctt ttgtcattta tttatttatg tgcagacttc	1080
aagtgtcag gcttagataa cttttggtaa aagtacactc tcatctttcg cccactgggt	1140
cctctttctt tctttgctat tctttgaact cgttctctgt ggtttatttt tctatgccag	1200
gagcatatat tatttgtatc agtcctaag cttagcttac aatagtctga catggctctc	1260
cttacagagt tactcattac tcatcctcta gtctgttttt ttttttaacc tttctttggt	1320
gttttggttt tttaaaaaaa acctttccct tctccctttt gatcacttgt tccctaactt	1380
gcatcttttc attttgacgg gcctcaaaat ctatgtctca ttctgcactt cactactcat	1440
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tgagttacac ataccctta gtccataatc acctgatatc gctttgtgtg ttgccctatt	1560
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Val Lys Phe Thr Pro Arg Ser Phe Trp Gly Ser Arg Pro Lys His Thr	
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Gly Gly Arg Ser Glu Met Arg Ala His Val Pro Gln Ala Pro Trp Ala	
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Arg Gln Ala Pro Pro Val Leu Pro Leu Trp Thr Val Val Asn Asp His	
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Pro His Glu Lys Pro Val Ser Arg Pro Gln Asn Thr *	
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<222> (431)..(1924)

<220>

<221> misc\_feature

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cagcggccaa gctcatggcc ggctgagcgg gacgccgcct ccgcctcagc caccgccgcc 240  
gccgncgcct cctcctcctc agccggcggc ggcccgggcc cagcaaccat ggctgaagac 300  
tactgggacg ggcgctcgcg gcgaacagga ggagaaggag gtcgcgcggc ctcaccccg 360  
gccgccgccc caggcgccgc cgcgccggcc ccgcggctct gaggttgctc gcgcgcccc 420  
gccgatcgcc atg gat cgg atg aag aag atc aaa cgg cag ctg tca atg 469  
Met Asp Arg Met Lys Lys Ile Lys Arg Gln Leu Ser Met  
1 5 10  
aca ctc cga ggt ggc cga ggc ata gac aag acc aat ggt gcc cct gag 517  
Thr Leu Arg Gly Gly Arg Gly Ile Asp Lys Thr Asn Gly Ala Pro Glu  
14 19 24 29  
cag ata ggc ctg gat gag agt ggt ggt ggt ggc ggc agt gac cct gga 565  
Gln Ile Gly Leu Asp Glu Ser Gly Gly Gly Gly Gly Ser Asp Pro Gly  
30 35 40 45  
gag gcc ccc aca cgt gct gct cct ggg gaa ctt cgt tct gca cgg ggc 613  
Glu Ala Pro Thr Arg Ala Ala Pro Gly Glu Leu Arg Ser Ala Arg Gly  
46 51 56 61  
cca ctc agc tct gca cca gag att gtg cac gag gac ttg aag atg ggg 661  
Pro Leu Ser Ser Ala Pro Glu Ile Val His Glu Asp Leu Lys Met Gly  
62 67 72 77  
tct gat ggg gag agt gac cag gct tca gcc acg tcc tcg gat gag gtg 709  
Ser Asp Gly Glu Ser Asp Gln Ala Ser Ala Thr Ser Ser Asp Glu Val  
78 83 88 93  
cag tct cca gtg aga gtg cgt atg cgc aac cat ccc cca cgc aag atc 757  
Gln Ser Pro Val Arg Val Arg Met Arg Asn His Pro Pro Arg Lys Ile  
94 99 104 109  
tcc act gag gac atc aac aag cgc cta tca cta cca gct gac atc cgg 805  
Ser Thr Glu Asp Ile Asn Lys Arg Leu Ser Leu Pro Ala Asp Ile Arg  
110 115 120 125





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Cys Ile Phe Tyr Glu Met Ala Thr Gly Arg Pro Leu Phe Pro Gly Ser	
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acg gtg gag gaa cag cta cac ttc atc ttc cgt atc tta gga acc cca	1573
Thr Val Glu Glu Gln Leu His Phe Ile Phe Arg Ile Leu Gly Thr Pro	
366 371 376 381	
act gag gag acg tgg cca ggc atc ctg tcc aac gag gag ttc aag aca	1621
Thr Glu Glu Thr Trp Pro Gly Ile Leu Ser Asn Glu Glu Phe Lys Thr	
382 387 392 397	
tac aac tac ccc aag tac cga gcc gag gcc ctt ttg agc cac gca ccc	1669
Tyr Asn Tyr Pro Lys Tyr Arg Ala Glu Ala Leu Leu Ser His Ala Pro	
398 403 408 413	
cga ctt gat agc gac ggg gcc gac ctc ctc acc aag ctg ttg cag ttt	1717
Arg Leu Asp Ser Asp Gly Ala Asp Leu Leu Thr Lys Leu Leu Gln Phe	
414 419 424 429	
gag ggt cga aat cgg atc tcc gca gag gat gcc atg aaa cat cca ttc	1765
Glu Gly Arg Asn Arg Ile Ser Ala Glu Asp Ala Met Lys His Pro Phe	
430 435 440 445	
ttc ctc agt ctg ggg gag cgg atc cac aaa ctt cct gac act act tcc	1813
Phe Leu Ser Leu Gly Glu Arg Ile His Lys Leu Pro Asp Thr Thr Ser	
446 451 456 461	
ata ttt gca cta aag gag att cag cta caa aag gag gcc agc ctt cgg	1861
Ile Phe Ala Leu Lys Glu Ile Gln Leu Gln Lys Glu Ala Ser Leu Arg	
462 467 472 477	
tct tcg tcg atg cct gac tca gtt gcc ggt gga cag cat ggc cgt gcc	1909
Ser Ser Ser Met Pro Asp Ser Val Ala Gly Gly Gln His Gly Arg Ala	
478 483 488 493	
agc ctc cca cac tga ggccaggtct acccccatc ataccagccc ccaggaccac	1964
Ser Leu Pro His *	
494	
tacccacagg ccagccagggt gtccagagct agcccagggt ggggatctcg actcagacaa	2024
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gcctcatatt gtgtgggcct ttttttgttt gtttcattca ttgttttttt ttttttaatt	2144
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<213> Homo sapiens

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<222> (193) .. (1533)

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ccggcgttgt gctttccac ccttctagag tttctggagt ccctggagcc ggacctgccc 180
gccctgagag cc atg ggg ctc cac ctg tgg gct gca ggc cca gga acc 228
Met Gly Leu His Leu Trp Ala Ala Gly Pro Gly Thr
1 5 10
cac cct gct gga att agc gat ttg ctg gct gaa gtg tcc gct gaa gtg 276
His Pro Ala Gly Ile Ser Asp Leu Leu Ala Glu Val Ser Ala Glu Val
13 18 23 28
gat ggg cca gtg cca gga tac ctc tct tcc ccc cag agc ata aca gac 324
Asp Gly Pro Val Pro Gly Tyr Leu Ser Ser Pro Gln Ser Ile Thr Asp
29 34 39 44
acg tgc ctg tac atc ttc acc tct ggc acc acg ggc ctc ccc aag gct 372
Thr Cys Leu Tyr Ile Phe Thr Ser Gly Thr Thr Gly Leu Pro Lys Ala
45 50 55 60
gct cgg atc agt cat ctg aag atc ctg caa tgc cag ggc ttc tat cag 420
Ala Arg Ile Ser His Leu Lys Ile Leu Gln Cys Gln Gly Phe Tyr Gln
61 66 71 76
ctg tgt ggt gtc cac cag gaa gat gtg atc tac ctc gcc ctc cca ctc 468
Leu Cys Gly Val His Gln Glu Asp Val Ile Tyr Leu Ala Leu Pro Leu
77 82 87 92

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tac cac atg tcc ggt tcc ctg ctg ggc atc gtg ggc tgc atg ggc att	516
Tyr His Met Ser Gly Ser Leu Leu Gly Ile Val Gly Cys Met Gly Ile	
93 98 103 108	
ggg gcc aca gtg gtg ctg aaa tcc aag ttc tgc gct ggt cag ttc tgg	564
Gly Ala Thr Val Val Leu Lys Ser Lys Phe Ser Ala Gly Gln Phe Trp	
109 114 119 124	
gaa gat tgc cag cag cac agg gtg acg gtg ttc cag tac att ggg gag	612
Glu Asp Cys Gln Gln His Arg Val Thr Val Phe Gln Tyr Ile Gly Glu	
125 130 135 140	
ctg tgc cga tac ctt gtc aac cag ccc ccg agc aag gca gaa cgt ggc	660
Leu Cys Arg Tyr Leu Val Asn Gln Pro Pro Ser Lys Ala Glu Arg Gly	
141 146 151 156	
cat aag gtc cgg ctg gca gtg ggc agc ggg ctg cgc cca gat acc tgg	708
His Lys Val Arg Leu Ala Val Gly Ser Gly Leu Arg Pro Asp Thr Trp	
157 162 167 172	
gag cgt ttt gtg cgg cgc ttc ggg ccc ctg cag gtg ctg gag aca tat	756
Glu Arg Phe Val Arg Arg Phe Gly Pro Leu Gln Val Leu Glu Thr Tyr	
173 178 183 188	
gga ctg aca gag ggc aac gtg gcc acc atc aac tac aca gga cag cgg	804
Gly Leu Thr Glu Gly Asn Val Ala Thr Ile Asn Tyr Thr Gly Gln Arg	
189 194 199 204	
ggc gct gtg ggg cgt gct tcc tgg ctt tac aag cat atc ttc ccc ttc	852
Gly Ala Val Gly Arg Ala Ser Trp Leu Tyr Lys His Ile Phe Pro Phe	
205 210 215 220	
tcc ttg att cgc tat gat gtc acc aca gga gag cca att cgg gac ccc	900
Ser Leu Ile Arg Tyr Asp Val Thr Thr Gly Glu Pro Ile Arg Asp Pro	
221 226 231 236	
cag ggg cac tgt atg gcc aca tct cca ggt gag cca ggg ctg ctg gtg	948
Gln Gly His Cys Met Ala Thr Ser Pro Gly Glu Pro Gly Leu Leu Val	
237 242 247 252	
gcc ccg gta agc cag cag tcc cca ttc ctg ggc tat gct ggc ggg cca	996
Ala Pro Val Ser Gln Gln Ser Pro Phe Leu Gly Tyr Ala Gly Gly Pro	
253 258 263 268	
gag ctg gcc cag ggg aag ttg cta aag gat gtc ttc cgg cct ggg gat	1044
Glu Leu Ala Gln Gly Lys Leu Leu Lys Asp Val Phe Arg Pro Gly Asp	
269 274 279 284	
gtt ttc ttc aac act ggg gac ctg ctg gtc tgc gat gac caa ggt ttt	1092
Val Phe Phe Asn Thr Gly Asp Leu Leu Val Cys Asp Asp Gln Gly Phe	
285 290 295 300	
ctc cgc ttc cat gat cgt act gga gac acc ttc agg tgg aag ggg gag	1140
Leu Arg Phe His Asp Arg Thr Gly Asp Thr Phe Arg Trp Lys Gly Glu	
301 306 311 316	

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aat gtg gcc aca acc gag gtg gca gag gtc ttc gag gcc cta gat ttt      1188
Asn Val Ala Thr Thr Glu Val Ala Glu Val Phe Glu Ala Leu Asp Phe
317                               322                               327                               332

ctt cag gag gtg aac gtc tat gga gtc act gtg cca ggg cat gaa ggc      1236
Leu Gln Glu Val Asn Val Tyr Gly Val Thr Val Pro Gly His Glu Gly
333                               338                               343                               348

agg gct gga atg gca gcc cta gtt ctg cgt ccc ccc cac gct ttg gac      1284
Arg Ala Gly Met Ala Ala Leu Val Leu Arg Pro Pro His Ala Leu Asp
349                               354                               359                               364

ctt atg cag ctc tac acc cac gtg tct gag aac ttg cca cct tat gcc      1332
Leu Met Gln Leu Tyr Thr His Val Ser Glu Asn Leu Pro Pro Tyr Ala
365                               370                               375                               380

cgg ccc cga ttc ctc agg ctc cag gag tct ttg gcc acc aca gag acc      1380
Arg Pro Arg Phe Leu Arg Leu Gln Glu Ser Leu Ala Thr Thr Glu Thr
381                               386                               391                               396

ttc aaa cag cag aaa gtt cgg atg gca aat gag ggc ttc gac ccc agc      1428
Phe Lys Gln Gln Lys Val Arg Met Ala Asn Glu Gly Phe Asp Pro Ser
397                               402                               407                               412

acc ctg tct gac cca ctg tac gtt ctg gac cag gct gta ggt gcc tac      1476
Thr Leu Ser Asp Pro Leu Tyr Val Leu Asp Gln Ala Val Gly Ala Tyr
413                               418                               423                               428

ctg ccc ctc aca act gcc cgg tac agc gcc ctc ctg gca gga aac ctt      1524
Leu Pro Leu Thr Thr Ala Arg Tyr Ser Ala Leu Leu Ala Gly Asn Leu
429                               434                               439                               444

cga atc tga gaacttc cacacctgag gcacctgaga gaggaactct gtggggtggg      1580
Arg Ile *
445

ggccggttga ggtgtactgg gctgtcaggg atcttttcta taccagaact gcggtcacta      1640

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<210> 55
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<213> Homo sapiens

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ctgttggAAC tgctctgccA aaatttgccA tccgaggg	atg ctg aaa acc ttt	173
	Met Leu Lys Thr Phe	
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ggg ctt cat gga gtc gtc tta gat gtt gat tca gtg aat gaa ctg gtg	221	
Gly Leu His Gly Val Val Leu Asp Val Asp Ser Val Asn Glu Leu Val		
6 11 16 21		
cag gta gaa acg tac ctc cgc agt gaa ggt gtg ctg gtg cga tac tgg	269	
Gln Val Glu Thr Tyr Leu Arg Ser Glu Gly Val Leu Val Arg Tyr Trp		
22 27 32 37		
tat cct att gac atg ttg gaa agg ccc cca gca ggc tac cga agg act	317	
Tyr Pro Ile Asp Met Leu Glu Arg Pro Pro Ala Gly Tyr Arg Arg Thr		
38 43 48 53		
gcc acc aat ggg ctg gtc aca ctg gac aat acc aac ctt caa att cac	365	
Ala Thr Asn Gly Leu Val Thr Leu Asp Asn Thr Asn Leu Gln Ile His		
54 59 64 69		
agg gag ctg ctg cgc tgc gag gct gcg ctg gcc agg ctg tac tgc cgc	413	
Arg Glu Leu Leu Arg Cys Glu Ala Ala Leu Ala Arg Leu Tyr Cys Arg		
70 75 80 85		
atg gcc ctg ctc aat atc ttc gcc cgc aag ttg cct cac ttg ttc act	461	
Met Ala Leu Leu Asn Ile Phe Ala Pro Lys Leu Pro His Leu Phe Thr		
86 91 96 101		
cgc ctc ttc cac atc cct gcc atc cgg gac att acc ctg gag cac ctg	509	
Arg Leu Phe His Ile Pro Ala Ile Arg Asp Ile Thr Leu Glu His Leu		
102 107 112 117		
caa ctg ctg tcc aat cag ctc ctc gca cct cct ctc cca gac ggc acc	557	
Gln Leu Leu Ser Asn Gln Leu Leu Ala Pro Pro Leu Pro Asp Gly Thr		
118 123 128 133		
atc agc tcc agc tcg atc ctc ctg gcg cag tct tta cag cat tgc atc	605	
Ile Ser Ser Ser Ser Ile Leu Leu Ala Gln Ser Leu Gln His Cys Ile		
134 139 144 149		
cat tcc cag aac tgc tcc gcc acg gac ctc ttt tac cag ggc aac tcc	653	
His Ser Gln Asn Cys Ser Ala Thr Asp Leu Phe Tyr Gln Gly Asn Ser		
150 155 160 165		
cag aca gtg aga gag tgg ctc aac gtg gcc atc acc cgg acc ctg cac	701	
Gln Thr Val Arg Glu Trp Leu Asn Val Ala Ile Thr Arg Thr Leu His		
166 171 176 181		
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Gln Gly Glu Glu Ser Leu Leu Glu Leu Thr Lys Gln Ile Cys Ser Phe		
182 187 192 197		
ctg cag aca gca cca gag cag ttc ccc tcc gaa gag ttc cca att tcc	797	
Leu Gln Thr Ala Pro Glu Gln Phe Pro Ser Glu Glu Phe Pro Ile Ser		
198 203 208 213		
gaa tcc aaa gtc aac atg gac gtg aat ttc ccc ggg gca gct ttt gtt	845	

Glu 214	Ser	Lys	Val	Asn	Met	Asp	Val	Asn	Phe	Pro	Gly	Ala	Ala	Phe	Val 229	
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Val	Val	Ser	Cys	Lys	Glu	Ser	Gln	Ser	Gly	Phe	Arg	Lys	Asp	Ser	Ser	
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ctg	tac	aag	gca	ccg	tgg	gca	cgg	gtg	ctc	gta	tat	ggc	ctc	ggc	cac	941
Leu	Tyr	Lys	Ala	Pro	Trp	Ala	Arg	Val	Leu	Val	Tyr	Gly	Leu	Gly	His	
246					251					256					261	
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Lys	Val	Lys	Arg	Asn	Gly	Gln	Leu	Asn	Leu	Ile	Glu	Ala	Ala	Cys	Tyr	
262					267					272					277	
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Pro	Arg	Asp	Ala	Ser	Pro	Ala	Asn	Thr	Gly	Leu	Ala	Pro	Pro	Pro	Thr	
278					283					288					293	
gct	gac	cag	tac	ccc	tct	gtg	gtc	ctc	tcc	aca	gac	agg	gtc	cac	atc	1085
Ala	Asp	Gln	Tyr	Pro	Ser	Val	Val	Leu	Ser	Thr	Asp	Arg	Val	His	Ile	
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326					331					336					341	
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Phe	Leu	Trp	Thr	Thr	Asp	Met	Ala	Ala	Cys	Val	Lys	Glu	Leu	Val	Phe	
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cat	ctc	ctg	gca	gag	ctc	ctg	cgc	acg	gtg	cac	acc	ctg	gag	cag	agg	1373
His	Leu	Leu	Ala	Glu	Leu	Leu	Arg	Thr	Val	His	Thr	Leu	Glu	Gln	Arg	
390					395					400					405	
cgg	cac	ccc	gct	ggc	ctg	tcc	tcc	tca	atc	gcc	ctc	cag	ctg	aac	ccc	1421
Arg	His	Pro	Ala	Gly	Leu	Ser	Ser	Ser	Ile	Ala	Leu	Gln	Leu	Asn	Pro	
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Ala Leu Met Glu Gly Cys Leu Ala Val Ala Glu Val Thr Leu Pro Thr				
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aac atg agt gtc aca gcc agt ggg gtg acc tca gcg acc gcc cca aat				1661
Asn Met Ser Val Thr Ala Ser Gly Val Thr Ser Ala Thr Ala Pro Asn				
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Leu Ser Asp Ser Ser Ser Ser Ser Ser Ser Pro Gly Gln Thr Pro				
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Gln Ser Pro Ser Leu Leu Ser Lys Arg Lys Lys Val Lys Met Lys Arg				
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Glu Lys Ala Ser Ser Ser Gly Lys Arg Gln Ser Ser Arg Thr Val Asp				
534	539	544	549	
tcg gac ccc acc gtg ctc agc atc gga ggc agc aag ccc gag gac atg				1853
Ser Asp Pro Thr Val Leu Ser Ile Gly Gly Ser Lys Pro Glu Asp Met				
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ctg tgg ttc cac cgc gca ctc acc ctg ctc atc atc ctc cgc cac ctc				1901
Leu Trp Phe His Arg Ala Leu Thr Leu Leu Ile Ile Leu Arg His Leu				
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acc agg aag gac cca cag ggg ctg ggc gtg acg agt gac gcc atc gcc				1949
Thr Arg Lys Asp Pro Gln Gly Leu Gly Val Thr Ser Asp Ala Ile Ala				
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gat gcc tgc cag gcc ctg gtg ggc ccc acc gcc cac agc cgc ttg ctg				1997
Asp Ala Cys Gln Ala Leu Val Gly Pro Thr Ala His Ser Arg Leu Leu				
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Val Ile Ser Gly Ile Pro Thr His Leu Asp Glu Gly Val Val Arg Gly				
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gcc atc cgc aag gcc tgc aac gcc cac ggc ggg gtc ttc aaa gac gag				2093
Ala Ile Arg Lys Ala Cys Asn Ala His Gly Gly Val Phe Lys Asp Glu				
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Ile Tyr Ile Pro Leu Gln Glu Glu Asp Thr Lys Lys Pro Lys Asp Lys				
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Ala Glu Gly Gly Asp Gly Lys Val Glu Pro Glu Lys Thr Leu Ala Phe				
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Lys Trp Thr Leu Glu Met Asp Val Ala Leu Val Gln Tyr Ile Asn Gln	
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Val	Tyr	Leu	Asp	Pro	Ala	Asp	Ala	Ala	Asp	Pro	Arg	Val	Ala	Cys	Leu	
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Leu	Asn	Val	Pro	Ile	Glu	Ser	Leu	Arg	Leu	Arg	Phe	Ala	Leu	Leu	Gln	
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Gln	Leu	Leu	His	Phe	Leu	Gly	Gln	Leu	Leu	Gly	Ile	Ala	Ile	Arg	Ala	
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Asp	Val	Pro	Leu	Pro	Leu	Asp	Leu	Leu	Pro	Ser	Phe	Trp	Lys	Thr	Leu	

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Val Gly Glu Pro Leu Asp Pro Glu Gln Asp Leu Gln Glu Ala Asp Ile				
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Leu Thr Tyr Asn Tyr Val Lys Lys Phe Glu Ser Ile Asn Asp Glu Thr				
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Glu Leu Glu Ala Leu Cys Ala Glu Ile Ala Ser Gln His Leu Ala Thr				
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Glu Ser Pro Asp Ser Pro Asn Lys Pro Cys Cys Arg Phe Thr Tyr Leu				
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Leu Val Ala Trp Glu Asn Lys Asp Ile Tyr Ala Ala Ala Ile Arg Ser				
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Glu Phe Leu Lys Ala His Thr Met Tyr Gln Val Gly Leu Met Glu Thr				
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Glu Glu Leu Cys Lys Phe Ile Lys Phe Ala Cys Asn Gln Glu Arg Ile				
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Pro Pro Tyr Pro Met Lys Ile Ala Pro Pro Asp Gly Thr Ala Gly Ser				
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His Gly Ala Asn Pro Ser Val Thr Gly Leu Gln Tyr Ser Val Tyr Pro	
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atc att tgg gca gca ggg aga ggc cat gca gat ata gtt cat ctt tta	662
Ile Ile Trp Ala Ala Gly Arg Gly His Ala Asp Ile Val His Leu Leu	
142 147 152 157	
ctg caa aat ggt gct aaa gtc aac tgc tct gat aag tat gga acc acc	710
Leu Gln Asn Gly Ala Lys Val Asn Cys Ser Asp Lys Tyr Gly Thr Thr	
158 163 168 173	
cct tta gtt tgg gct gca cga aag ggt cat ttg gaa tgt gtg aaa cat	758
Pro Leu Val Trp Ala Ala Arg Lys Gly His Leu Glu Cys Val Lys His	
174 179 184 189	
tta ttg gcc atg gga gct gat gtg gat caa gaa gga gct aat tca atg	806
Leu Leu Ala Met Gly Ala Asp Val Asp Gln Glu Gly Ala Asn Ser Met	
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Thr Ala Leu Ile Val Ala Val Lys Gly Gly Tyr Thr Gln Ser Val Lys	
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Glu Ile Leu Lys Arg Asn Pro Asn Val Asn Leu Thr Asp Lys Asp Gly	
222 227 232 237	
aat aca gct ttg atg att gca tca aag gag gga cat acg gag att gtg	950
Asn Thr Ala Leu Met Ile Ala Ser Lys Glu Gly His Thr Glu Ile Val	
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Gln Asp Leu Leu Asp Ala Gly Thr Tyr Val Asn Ile Pro Asp Arg Ser	
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Gly Asp Thr Val Leu Ile Gly Ala Val Arg Gly Gly His Val Glu Ile	
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Val Arg Ala Leu Leu Gln Lys Tyr Ala Asp Ile Asp Ile Arg Gly Gln	
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Asp Asn Lys Thr Ala Leu Tyr Trp Ala Val Glu Lys Gly Asn Ala Thr	
302 307 312 317	

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Met Val Arg Asp Ile Leu Gln Cys Asn Pro Asp Thr Glu Ile Cys Thr	
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Lys Asp Gly Glu Thr Pro Leu Ile Lys Ala Thr Lys Met Arg Asn Ile	
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Asp Lys Lys Gly Asp Thr Pro Leu His Ile Ala Ile Arg Gly Arg Ser	
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Leu Tyr Arg Pro Asn Lys Ala Gly Glu Thr Pro Tyr Asn Ile Asp Cys	
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Ser His Gln Lys Ser Ile Leu Thr Gln Ile Phe Gly Ala Arg His Leu	
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 21 26 31 36

gaa tca agc act tca gat ttg cct tca ttc gaa gtt gga att aga gca 677  
 Glu Ser Ser Thr Ser Asp Leu Pro Ser Phe Glu Val Gly Ile Arg Ala  
 37 42 47 52

ttg tgt gag gtg aat aat gct gag ggt agt tgt ata gaa gaa aga aat 725  
 Leu Cys Glu Val Asn Asn Ala Glu Gly Ser Cys Ile Glu Glu Arg Asn  
 53 58 63 68

gtt gac cta aaa aat aat tca ctg gaa att gat caa aca gaa aat gtt 773  
 Val Asp Leu Lys Asn Asn Ser Leu Glu Ile Asp Gln Thr Glu Asn Val  
 69 74 79 84

aaa cca atg ttg aga ggt cgc ttc caa aga cct aaa ccc aat ttg tca 821  
 Lys Pro Met Leu Arg Gly Arg Phe Gln Arg Pro Lys Pro Asn Leu Ser  
 85 90 95 100

agg gct ggg aag aaa tca gtt ctt tca caa ggc aaa aca gag tca gag 869  
 Arg Ala Gly Lys Lys Ser Val Leu Ser Gln Gly Lys Thr Glu Ser Glu  
 101 106 111 116

agc aag aat tca cat tca aaa act tca gtt gaa aag aac cac gtg gaa 917  
 Ser Lys Asn Ser His Ser Lys Thr Ser Val Glu Lys Asn His Val Glu  
 117 122 127 132

aaa gat aaa atg aat aca ttg gac att ttg aga atg gag act aca gag 965  
 Lys Asp Lys Met Asn Thr Leu Asp Ile Leu Arg Met Glu Thr Thr Glu  
 133 138 143 148

aga gag aat cca gaa gct gaa act gta tct gtt ttg ggt gaa aaa aat 1013  
 Arg Glu Asn Pro Glu Ala Glu Thr Val Ser Val Leu Gly Glu Lys Asn  
 149 154 159 164

tgt ctg cag gaa ggg agt caa cta aag gct tta aga cct gta caa gtg 1061

Cys	Leu	Gln	Glu	Gly	Ser	Gln	Leu	Lys	Ala	Leu	Arg	Pro	Val	Gln	Val		
165					170					175					180		
agg	ggc	cga	ttg	caa	aag	cca	aag	cca	aat	gca	ggg	aaa	gct	gct	gaa	1109	
Arg	Gly	Arg	Leu	Gln	Lys	Pro	Lys	Pro	Asn	Ala	Gly	Lys	Ala	Ala	Glu		
181					186					191					196		
aga	aaa	gaa	att	ctc	ata	tca	cag	gaa	gaa	att	ggg	gcc	aat	gta	gag	1157	
Arg	Lys	Glu	Ile	Leu	Ile	Ser	Gln	Glu	Glu	Ile	Gly	Ala	Asn	Val	Glu		
197					202					207					212		
aag	aat	gaa	aat	gaa	tcc	tgt	gct	gat	aga	gat	act	cct	caa	cac	atg	1205	
Lys	Asn	Glu	Asn	Glu	Ser	Cys	Ala	Asp	Arg	Asp	Thr	Pro	Gln	His	Met		
213					218					223					228		
gaa	gat	caa	tcg	cgt	aaa	gat	ttt	gaa	gag	gaa	gat	gtc	ata	tta	cag	1253	
Glu	Asp	Gln	Ser	Arg	Lys	Asp	Phe	Glu	Glu	Glu	Asp	Val	Ile	Leu	Gln		
229					234					239					244		
cct	gag	aaa	aat	gat	tct	ttt	caa	aat	gtg	cag	cca	gat	gag	ccc	aag	1301	
Pro	Glu	Lys	Asn	Asp	Ser	Phe	Gln	Asn	Val	Gln	Pro	Asp	Glu	Pro	Lys		
245					250					255					260		
gtt	ctt	aat	gaa	tgt	cta	agc	gtt	caa	gag	aat	aat	aag	gca	aat	aaa	1349	
Val	Leu	Asn	Glu	Cys	Leu	Ser	Val	Gln	Glu	Asn	Asn	Lys	Ala	Asn	Lys		
261					266					271					276		
ctt	aac	caa	gtc	cca	att	cta	agg	act	cga	ttt	cag	aaa	cca	aag	cca	1397	
Leu	Asn	Gln	Val	Pro	Ile	Leu	Arg	Thr	Arg	Phe	Gln	Lys	Pro	Lys	Pro		
277					282					287					292		
aat	ata	gga	aga	gga	act	gga	agg	agt	gaa	att	tcc	tca	aag	gaa	gag	1445	
Asn	Ile	Gly	Arg	Gly	Thr	Gly	Arg	Ser	Glu	Ile	Ser	Ser	Lys	Glu	Glu		
293					298					303					308		
gta	cta	gag	aag	att	ctt	gtc	tct	ggg	gaa	atg	gcg	gca	gca	ttg	aga	1493	
Val	Leu	Glu	Lys	Ile	Leu	Val	Ser	Gly	Glu	Met	Ala	Ala	Ala	Leu	Arg		
309					314					319					324		
gaa	act	gta	aga	ctg	gac	acc	tca	cca	aag	gag	atg	gta	cca	gca	gag	1541	
Glu	Thr	Val	Arg	Leu	Asp	Thr	Ser	Pro	Lys	Glu	Met	Val	Pro	Ala	Glu		
325					330					335					340		
att	aat	act	aaa	gaa	atg	cag	tca	gat	tta	aaa	gaa	act	gga	aga	aga	1589	
Ile	Asn	Thr	Lys	Glu	Met	Gln	Ser	Asp	Leu	Lys	Glu	Thr	Gly	Arg	Arg		
341					346					351					356		
gcc	att	tct	ccc	agg	gag	aag	att	cta	gat	gtg	att	gat	gac	acc	ata	1637	
Ala	Ile	Ser	Pro	Arg	Glu	Lys	Ile	Leu	Asp	Val	Ile	Asp	Asp	Thr	Ile		
357					362					367					372		
gaa	atg	gag	aca	ggg	ctg	aaa	gca	atg	gga	aga	gag	att	tgt	cta	agg	1685	
Glu	Met	Glu	Thr	Gly	Leu	Lys	Ala	Met	Gly	Arg	Glu	Ile	Cys	Leu	Arg		
373					378					383					388		
gag	aag	acg	cca	gag	gtg	att	gat	gcc	act	gag	gaa	ata	gac	aaa	gat	1733	
Glu	Lys	Thr	Pro	Glu	Val	Ile	Asp	Ala	Thr	Glu	Glu	Ile	Asp	Lys	Asp		

389	394	399	404	
ttg gaa gaa gct gga aga aga gaa ata tcc cca cag aaa aat ggc cca Leu Glu Glu Ala Gly Arg Arg Glu Ile Ser Pro Gln Lys Asn Gly Pro 405 410 415 420	1781			
gag gag gtt aag cct cta ggt gaa gtg gag aca gat ttg aaa gca act Glu Glu Val Lys Pro Leu Gly Glu Val Glu Thr Asp Leu Lys Ala Thr 421 426 431 436	1829			
gga aat gag agt tcc cca agg gag aag aca cca gag gtg act gat gcc Gly Asn Glu Ser Ser Pro Arg Glu Lys Thr Pro Glu Val Thr Asp Ala 437 442 447 452	1877			
act gag gaa ata gac aaa aat ttg gaa gaa act gga aga aga aaa ata Thr Glu Glu Ile Asp Lys Asn Leu Glu Glu Thr Gly Arg Arg Lys Ile 453 458 463 468	1925			
tcc cca agg gaa aat ggc cca gag gag gtc aag cct gta gat gaa atg Ser Pro Arg Glu Asn Gly Pro Glu Glu Val Lys Pro Val Asp Glu Met 469 474 479 484	1973			
gag aca gat ttg aac gca act gga aga gag agt tct cca agg gag aag Glu Thr Asp Leu Asn Ala Thr Gly Arg Glu Ser Ser Pro Arg Glu Lys 485 490 495 500	2021			
aca cca gag gtg att gat gct act gag gaa ata gat ttg gaa gaa act Thr Pro Glu Val Ile Asp Ala Thr Glu Glu Ile Asp Leu Glu Glu Thr 501 506 511 516	2069			
gaa aga gaa gta tcc cca cag gaa aat gga cta gag gag gtc aag cct Glu Arg Glu Val Ser Pro Gln Glu Asn Gly Leu Glu Glu Val Lys Pro 517 522 527 532	2117			
cta ggt gaa atg gag acg gat ttg aaa gca act gga aga gac agt ttc Leu Gly Glu Met Glu Thr Asp Leu Lys Ala Thr Gly Arg Asp Ser Phe 533 538 543 548	2165			
cca agg ggg aag aca cca gag gtg att gat gcc att gag gaa ata gag Pro Arg Gly Lys Thr Pro Glu Val Ile Asp Ala Ile Glu Glu Ile Glu 549 554 559 564	2213			
ata gat ttg gaa gaa act gaa aga gaa ata tcc cca cag gaa aat ggc Ile Asp Leu Glu Glu Thr Glu Arg Glu Ile Ser Pro Gln Glu Asn Gly 565 570 575 580	2261			
cta gag gag gtt aag cct cta ggt gaa atg caa aca gat ttg aaa gca Leu Glu Glu Val Lys Pro Leu Gly Glu Met Gln Thr Asp Leu Lys Ala 581 586 591 596	2309			
acc gga agg gag att tcc cca agg gag aag aca cca gag gtg att gat Thr Gly Arg Glu Ile Ser Pro Arg Glu Lys Thr Pro Glu Val Ile Asp 597 602 607 612	2357			
gcc act gag gaa ata gac aaa gat ctg gaa gaa act gga aga aga gaa Ala Thr Glu Glu Ile Asp Lys Asp Leu Glu Glu Thr Gly Arg Arg Glu 613 618 623 628	2405			

ata tcc cca gag gaa aat ggc cca gag gag gtc aag cct gta gat gaa	2453
Ile Ser Pro Glu Glu Asn Gly Pro Glu Glu Val Lys Pro Val Asp Glu	
629 634 639 644	
atg gag aca gac ttg aaa aca act gga aga gag ggt tcc tca agg gag	2501
Met Glu Thr Asp Leu Lys Thr Thr Gly Arg Glu Gly Ser Ser Arg Glu	
645 650 655 660	
aag aca cga gag gtg att gat gct gct gag gta ata gag aca gat ttg	2549
Lys Thr Arg Glu Val Ile Asp Ala Ala Glu Val Ile Glu Thr Asp Leu	
661 666 671 676	
gaa gaa act gaa aga gaa ata tcg cca cag gaa aat ggc cca gag gag	2597
Glu Glu Thr Glu Arg Glu Ile Ser Pro Gln Glu Asn Gly Pro Glu Glu	
677 682 687 692	
gtc aag cct gta ggt aaa atg gag aca gat ttg aaa gaa att aga gaa	2645
Val Lys Pro Val Gly Lys Met Glu Thr Asp Leu Lys Glu Ile Arg Glu	
693 698 703 708	
gaa att tcc caa agg gaa aag gtg cta gca gag ttc agt gct ata agg	2693
Glu Ile Ser Gln Arg Glu Lys Val Leu Ala Glu Phe Ser Ala Ile Arg	
709 714 719 724	
gaa aag gag att gat ttg aaa gaa act gga aaa aga gac att ccc atg	2741
Glu Lys Glu Ile Asp Leu Lys Glu Thr Gly Lys Arg Asp Ile Pro Met	
725 730 735 740	
atg gag aaa gta tca gga aag atg gct gtt gtt gaa gaa atg gag gca	2789
Met Glu Lys Val Ser Gly Lys Met Ala Val Val Glu Glu Met Glu Ala	
741 746 751 756	
gat ttg aaa gaa act gga aaa gaa aat ttt aga gag aga gga tct gaa	2837
Asp Leu Lys Glu Thr Gly Lys Glu Asn Phe Arg Glu Arg Gly Ser Glu	
757 762 767 772	
gag atc tgt gtt act gag gaa aag gtg gca gaa ttg aaa caa act gga	2885
Glu Ile Cys Val Thr Glu Glu Lys Val Ala Glu Leu Lys Gln Thr Gly	
773 778 783 788	
aaa aca gac att tct cca agg gaa aac gag cta gag gag acc agt acc	2933
Lys Thr Asp Ile Ser Pro Arg Glu Asn Glu Leu Glu Glu Thr Ser Thr	
789 794 799 804	
tca aga caa act gac aca cat tta atg cag agc ggt agc aat gac ttc	2981
Ser Arg Gln Thr Asp Thr His Leu Met Gln Ser Gly Ser Asn Asp Phe	
805 810 815 820	
agt gct atg cct tca cta gat att cag gta tgt att ttt ctg tcc ttt	3029
Ser Ala Met Pro Ser Leu Asp Ile Gln Val Cys Ile Phe Leu Ser Phe	
821 826 831 836	
aaa agt ttt ttg aat gct ttt tca gag gaa ata aat aat tcc atg att	3077
Lys Ser Phe Leu Asn Ala Phe Ser Glu Glu Ile Asn Asn Ser Met Ile	
837 842 847 852	

att ttg tcc tta agt cca aca aca ttt aaa aat ctc taa 3116  
 Ile Leu Ser Leu Ser Pro Thr Thr Phe Lys Asn Leu \*  
 853 858 863

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 <212> DNA  
 <213> Homo sapiens

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 <222> (57) .. (1193)

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atg tcc aaa gaa cct ctc att ctc tgg ctg atg att gag ttt tgg tgg	104
Met Ser Lys Glu Pro Leu Ile Leu Trp Leu Met Ile Glu Phe Trp Trp	
1 5 10 15	
ctt tac ctg aca cca gtc act tca gag act gtt gtg acg gag gtt ttg	152
Leu Tyr Leu Thr Pro Val Thr Ser Glu Thr Val Val Thr Glu Val Leu	
17 22 27 32	
ggc cac cgg gtg act ttg ccc tgt ctg tac tca tcc tgg tct cac aac	200
Gly His Arg Val Thr Leu Pro Cys Leu Tyr Ser Ser Trp Ser His Asn	
33 38 43 48	
agc aac agc atg tgc tgg ggg aaa gac cag tgc ccc tac tcc ggt tgc	248
Ser Asn Ser Met Cys Trp Gly Lys Asp Gln Cys Pro Tyr Ser Gly Cys	
49 54 59 64	
aag gag gcg ctc atc cgc act gat gga atg agg gtg acc tca aga aag	296
Lys Glu Ala Leu Ile Arg Thr Asp Gly Met Arg Val Thr Ser Arg Lys	
65 70 75 80	
tca gca aaa tat aga ctt cag ggg act atc cgc aga ggt gat gtc tcc	344
Ser Ala Lys Tyr Arg Leu Gln Gly Thr Ile Pro Arg Gly Asp Val Ser	
81 86 91 96	
ttg acc atc tta aac ccc agt gaa agt gac agc ggt gtg tac tgc tgc	392
Leu Thr Ile Leu Asn Pro Ser Glu Ser Asp Ser Gly Val Tyr Cys Cys	
97 102 107 112	
cgc ata gaa gtg cct ggc tgg ttc aac gat gta aag ata aac gtg cgc	440
Arg Ile Glu Val Pro Gly Trp Phe Asn Asp Val Lys Ile Asn Val Arg	
113 118 123 128	
ctg aat cta cag aga gcc tca aca acc acg cac aga aca gca acc acc	488
Leu Asn Leu Gln Arg Ala Ser Thr Thr Thr His Arg Thr Ala Thr Thr	
129 134 139 144	
acc aca cgc aga aca aca aca aca agc ccc acc acc acc cga caa atg	536
Thr Thr Arg Arg Thr Thr Thr Thr Ser Pro Thr Thr Thr Arg Gln Met	

550	555	560	
gat gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc			2085
Asp Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr			
565	570	575	
tac tcc tca caa atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag			2133
Tyr Ser Ser Gln Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln			
580	585	590	
gaa aaa gtg gcc acc ttg acg tct cag ctt tct gcc aat gct aat ctg			2181
Glu Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu			
595	600	605	610
gtg gct gct ttt gag cag agc ctg gtg aat atg aca tcc cgc ctg cga			2229
Val Ala Ala Phe Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg			
615	620	625	
cac ctg gca gag acg gcc gag gag aag gac act gag ctg ctg gat ttg			2277
His Leu Ala Glu Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu			
630	635	640	
cga gaa acc ata gac ttt ctg aag aaa aag aac tct gag gcc cag gca			2325
Arg Glu Thr Ile Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala			
645	650	655	
gtc att cag gga gcc ctt aat gcc tca gaa acc aca ccc aaa ggt agg			2373
Val Ile Gln Gly Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Gly Arg			
660	665	670	
aca tcc agc cac aga ttg aga ggg aac agg gag cag gaa agt aag agt			2421
Thr Ser Ser His Arg Leu Arg Gly Asn Arg Glu Gln Glu Ser Lys Ser			
675	680	685	690
att aca gat ttt tat ctg ggc cca tag			2448
Ile Thr Asp Phe Tyr Leu Gly Pro			
695			

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 <212> DNA  
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 <222> (143)..(2032)

<220>  
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 <222> (1)...(2155)  
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atgtgtgaat attcatcagc atttgcttgt ggaacgctca cctctgcttt ttactcttgc	120

gattgaggat gggggcatga cactccagtg tcaaaataag tcttagtaga tttccttggt 1271  
tcataaaaaa gactcactta ttccatggat gtcattgatc caggcttgct ttagtttcat 1331  
gaatgaaggg tacttttagag accacaactt ctctgtcaaa aaaaaaaaaa 1380

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<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (529)..(1308)

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accaaaccga aaaaaagaga tctctcgagg atccgaattc gcggccgcgt cgaggcggcg 120  
gtggcgccag cggttggtcc tgcctctccg ccacctccac cgcggttat cccctggctg 180  
gcggcggttg cggggcgggg gacagtagtt gtagacgcc gccctgcct cagagaagat 240  
accacattga atgaacaaag actgaacttt gtttacagat accttttata aaagatgtct 300  
gtggagtagt gttacagttc aaataacaaa ggattttgca ttatgagatg agtgagagtg 360  
gagaattgga caaaaattga tttttgatct ctgaatttg gtttttagct caccagttat 420  
tgtgtagtct cactatttga aaattcatgc tgaaaaactg agtgaatatg atcagatttc 480  
tccaccaa at tctcagcctg ataaggaaaa tcccgttttg tcaaccta atg aag cat 537  
Met Lys His  
1

tca aag aag aca tat gac tct ttt caa gat gaa ctt gaa gat tat att 585  
Ser Lys Lys Thr Tyr Asp Ser Phe Gln Asp Glu Leu Glu Asp Tyr Ile  
4 9 14 19

aaa gta cag aaa gcc aga ggc tta gag cca aag act tgt ttc aga aag 633  
Lys Val Gln Lys Ala Arg Gly Leu Glu Pro Lys Thr Cys Phe Arg Lys  
20 25 30 35

atg aaa ggg gac tat ttg gaa acc tgg ggg tac aaa gga gag gtt aat 681  
Met Lys Gly Asp Tyr Leu Glu Thr Trp Gly Tyr Lys Gly Glu Val Asn  
36 41 46 51

tcc aga ccc acg tat aga atg ttt gac cag aga ctc cca tct gaa acc 729  
Ser Arg Pro Thr Tyr Arg Met Phe Asp Gln Arg Leu Pro Ser Glu Thr  
52 57 62 67

atc cag acc tac cca aga tca tgc aat att cca caa aca gtg gaa aat 777

Ile Gln Thr Tyr Pro Arg Ser Cys Asn Ile Pro Gln Thr Val Glu Asn	
68 73 78 83	
cgg ttg cct cag tgg tta cca gcc cat gac agc aga ttg aga cta gac	825
Arg Leu Pro Gln Trp Leu Pro Ala His Asp Ser Arg Leu Arg Leu Asp	
84 89 94 99	
tct ctg agc tac tgt cag ttc acg agg gac tgt ttc tca gaa aaa cca	873
Ser Leu Ser Tyr Cys Gln Phe Thr Arg Asp Cys Phe Ser Glu Lys Pro	
100 105 110 115	
gta ccc ctg aac ttt aat caa caa gaa tat att tgt ggc tca cat ggt	921
Val Pro Leu Asn Phe Asn Gln Gln Glu Tyr Ile Cys Gly Ser His Gly	
116 121 126 131	
gta gaa cat aga gtt tac aag cac ttc tcc tca gat aac agt acc agt	969
Val Glu His Arg Val Tyr Lys His Phe Ser Ser Asp Asn Ser Thr Ser	
132 137 142 147	
act cat caa gcc agt cac aaa cag ata cat cag aag agg aaa agg cac	1017
Thr His Gln Ala Ser His Lys Gln Ile His Gln Lys Arg Lys Arg His	
148 153 158 163	
cca gag gaa ggc aga gaa aaa tca gag gag gag cgg tct aag cat aag	1065
Pro Glu Glu Gly Arg Glu Lys Ser Glu Glu Glu Arg Ser Lys His Lys	
164 169 174 179	
aga aaa aaa agc tgc gag gaa att gac tta gac aaa cac aag agc atc	1113
Arg Lys Lys Ser Cys Glu Glu Ile Asp Leu Asp Lys His Lys Ser Ile	
180 185 190 195	
caa aga aag aaa aca gag gtg gaa ata gaa acc gta cat gtc agt aca	1161
Gln Arg Lys Lys Thr Glu Val Glu Ile Glu Thr Val His Val Ser Thr	
196 201 206 211	
gaa aag ctt aag aat cga aag gag aaa aaa agc cga gat gta gtc tct	1209
Glu Lys Leu Lys Asn Arg Lys Glu Lys Lys Ser Arg Asp Val Val Ser	
212 217 222 227	
aag aaa gag gaa cgt aag cgt aca aaa aag aaa aag gaa caa ggc caa	1257
Lys Lys Glu Glu Arg Lys Arg Thr Lys Lys Lys Lys Glu Gln Gly Gln	
228 233 238 243	
gaa agg aca gag gag gaa atg ctt tgg gac cag tct att ctt gga ttt	1305
Glu Arg Thr Glu Glu Glu Met Leu Trp Asp Gln Ser Ile Leu Gly Phe	
244 249 254 259	
tga agct ttcaaagttg gttctcccaa agttaattg aaaaaatagg tgagagcttg	1362
* 260	
gttttatgat atccgtgttc ataccacttt tcttatgtga ataggttctt taacttctaa	1422
caaaggccta gtaaacaag tgttttagcat gcttgctctc caacacagaa attgcttttc	1482
ctcattttct aaaagcatta ttacattttt tgaacatata gtgtaatttc ctttaatgaa	1542



agtgactctg cttttattca tcaaattgct ttgatggtgg aaatattttc tgttgggagg 1602  
 ttattttattt taaattggag gattaatgac ctttgcacaa tctgtttctt gattggggttt 1662  
 gttatagttt tgagttgggt attttatgtt cattgggtttt tctctgtgaa gcaatttttt 1722  
 tctcctttat tagatctaac ttgcag 1748

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 <212> DNA  
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 <222> (123)..(2291)

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 cc atg gag ggc tca cgt ccc cgc gcc ccg agc ggc cac tta gcg ccg 167  
 Met Glu Gly Ser Arg Pro Arg Ala Pro Ser Gly His Leu Ala Pro  
 1 5 10  
 tcg ccg ccg gct ttc gac ggc gag ctg gat ctg cag cga tac tcc aac 215  
 Ser Pro Pro Ala Phe Asp Gly Glu Leu Asp Leu Gln Arg Tyr Ser Asn  
 16 21 26 31  
 ggg cca gcc gtg agc gca ggg tcg ctc ggg atg gga gcg gtg agc tgg 263  
 Gly Pro Ala Val Ser Ala Gly Ser Leu Gly Met Gly Ala Val Ser Trp  
 32 37 42 47  
 tct gag agt cgt gca ggc gaa cgg cgc ttc ccc tgc cct gta tgc ggg 311  
 Ser Glu Ser Arg Ala Gly Glu Arg Arg Phe Pro Cys Pro Val Cys Gly  
 48 53 58 63  
 aag cgc ttc cgc ttc aac tct atc ctt gct ttg cac ctg cgg gcg cac 359  
 Lys Arg Phe Arg Phe Asn Ser Ile Leu Ala Leu His Leu Arg Ala His  
 64 69 74 79  
 cca gga gcc cag gcc ttc cag tgc cct cac tgc ggc cac cgc gcg gcg 407  
 Pro Gly Ala Gln Ala Phe Gln Cys Pro His Cys Gly His Arg Ala Ala  
 80 85 90 95  
 cag cgg gct ctg ctg cgc tcg cac ctg cgc aca cac cag ccc gag cgc 455  
 Gln Arg Ala Leu Leu Arg Ser His Leu Arg Thr His Gln Pro Glu Arg  
 96 101 106 111  
 cca cgt agt cct gct gca cgc ctg ttg ctg gag ttg gaa gag cgc gcg 503  
 Pro Arg Ser Pro Ala Ala Arg Leu Leu Leu Glu Leu Glu Glu Arg Ala  
 112 117 122 127

cta cta cgc gag gcc cga ctg ggg aga gcc cga agc tca ggg ggc atg	551
Leu Leu Arg Glu Ala Arg Leu Gly Arg Ala Arg Ser Ser Gly Gly Met	
128 133 138 143	
cag gcc acc cct gcc act gag ggt ctg gcg cgg ccc cag gct cct tca	599
Gln Ala Thr Pro Ala Thr Glu Gly Leu Ala Arg Pro Gln Ala Pro Ser	
144 149 154 159	
tcg tcc gcc ttc cgt tgc ccc tac tgc aaa ggc aag ttt cgc acc tcg	647
Ser Ser Ala Phe Arg Cys Pro Tyr Cys Lys Gly Lys Phe Arg Thr Ser	
160 165 170 175	
gcg gag cgc gaa cgc cac ctg cac atc ctg cat agg ccc tgg aag tgc	695
Ala Glu Arg Glu Arg His Leu His Ile Leu His Arg Pro Trp Lys Cys	
176 181 186 191	
ggc ctg tgc agt ttc ggc tcc agc cag gag gag gag ctg ctg cac cac	743
Gly Leu Cys Ser Phe Gly Ser Ser Gln Glu Glu Glu Leu Leu His His	
192 197 202 207	
agc ctg acg gcc cac ggg gct ccc gag cgt ccc ctg gcg gcc acc tcc	791
Ser Leu Thr Ala His Gly Ala Pro Glu Arg Pro Leu Ala Ala Thr Ser	
208 213 218 223	
gct gcg cct ccg cct cag cct cag cct cag cct cca ccc cag ccc gaa	839
Ala Ala Pro Pro Pro Gln Pro Gln Pro Gln Pro Pro Pro Gln Pro Glu	
224 229 234 239	
ccc aga tca gtc ccc cag ccg gag ccg gag ccg gag ccc gaa cgt gag	887
Pro Arg Ser Val Pro Gln Pro Glu Pro Glu Pro Glu Pro Glu Arg Glu	
240 245 250 255	
gca acc ccg acc cca gct cct gcc gct ccc gag gag ccc cca gcg cct	935
Ala Thr Pro Thr Pro Ala Pro Ala Ala Pro Glu Glu Pro Pro Ala Pro	
256 261 266 271	
ccg gag ttc cgc tgc caa gtg tgc ggc cag agc ttt aca cag tct tgg	983
Pro Glu Phe Arg Cys Gln Val Cys Gly Gln Ser Phe Thr Gln Ser Trp	
272 277 282 287	
ttt ctc aag ggc cac atg cgt aag cac aag gcc tcc ttc gat cat gcg	1031
Phe Leu Lys Gly His Met Arg Lys His Lys Ala Ser Phe Asp His Ala	
288 293 298 303	
tgt ccg gtg tgc ggc cgc tgc ttc aag gag ccc tgg ttc ctt aag aac	1079
Cys Pro Val Cys Gly Arg Cys Phe Lys Glu Pro Trp Phe Leu Lys Asn	
304 309 314 319	
cac atg aag gtg cac gcc agc aag ctg ggc cca ctg cgt gcc ccg ggg	1127
His Met Lys Val His Ala Ser Lys Leu Gly Pro Leu Arg Ala Pro Gly	
320 325 330 335	
cct gcc tcc ggg cct gcc cgc gcc ccc cag cct cct gac ctc ggc ctg	1175
Pro Ala Ser Gly Pro Ala Arg Ala Pro Gln Pro Pro Asp Leu Gly Leu	
336 341 346 351	
ctg gcc tat gag ccg ttg ggc cca gcg ctc ctc ttg gcc ccg gct ccc	1223

Leu Ala Tyr Glu Pro Leu Gly Pro Ala Leu Leu Leu Ala Pro Ala Pro	
352 357 362 367	
acc ccg gcc gag cgc cgt gag ccc ccg agc ctc ttg ggc tac ctg agc	1271
Thr Pro Ala Glu Arg Arg Glu Pro Pro Ser Leu Leu Gly Tyr Leu Ser	
368 373 378 383	
ctg cga gct ggc gag ggc cgg ccc aac ggc gag ggt gct gag ccc ggt	1319
Leu Arg Ala Gly Glu Gly Arg Pro Asn Gly Glu Gly Ala Glu Pro Gly	
384 389 394 399	
ccc ggc cgc agc ttc gga ggc ttc cgc ccg ctg tcc tct gct ctc ccg	1367
Pro Gly Arg Ser Phe Gly Gly Phe Arg Pro Leu Ser Ser Ala Leu Pro	
400 405 410 415	
gcc cgg gct cgc cgg cac cgt gcg gag gag cct gag gaa gaa gag gag	1415
Ala Arg Ala Arg Arg His Arg Ala Glu Glu Pro Glu Glu Glu Glu Glu	
416 421 426 431	
gtg gtg gag gcc cag gag gaa acc tgg gcc cgg ggc agg tcg ctg ggc	1463
Val Val Glu Ala Gln Glu Glu Thr Trp Ala Arg Gly Arg Ser Leu Gly	
432 437 442 447	
tct ctg gct tcc ctg cac ccg cgc ccg ggt gag gga ccg ggg cac tct	1511
Ser Leu Ala Ser Leu His Pro Arg Pro Gly Glu Gly Pro Gly His Ser	
448 453 458 463	
gcc tct gct gct ggg gcc cag gca aga tcg acc gcc acg cag gaa gag	1559
Ala Ser Ala Ala Gly Ala Gln Ala Arg Ser Thr Ala Thr Gln Glu Glu	
464 469 474 479	
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Asn Gly Leu Leu Val Gly Gly Thr Arg Pro Glu Gly Gly Arg Gly Ala	
480 485 490 495	
acc ggc aag gat tgt cct ttc tgc gga aaa tct ttc cgc tca gca cat	1655
Thr Gly Lys Asp Cys Pro Phe Cys Gly Lys Ser Phe Arg Ser Ala His	
496 501 506 511	
cac ctc aaa gtg cat ctg cga gtg cac aca ggc gag cgg ccc tac aag	1703
His Leu Lys Val His Leu Arg Val His Thr Gly Glu Arg Pro Tyr Lys	
512 517 522 527	
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Cys Pro His Cys Asp Tyr Ala Gly Thr Gln Ser Gly Ser Leu Lys Tyr	
528 533 538 543	
cac cta cag cgc cac cac cgg gag cag agg agc ggg gcc ggc ccc ggg	1799
His Leu Gln Arg His His Arg Glu Gln Arg Ser Gly Ala Gly Pro Gly	
544 549 554 559	
cca ccc ccg gag cca ccg cct cct tcc cag ccg ggt tcg gcc ccg caa	1847
Pro Pro Pro Glu Pro Pro Pro Pro Ser Gln Arg Gly Ser Ala Pro Gln	
560 565 570 575	
tct gga gcc aag ccg tct ccg cag cct gcg acc tgg gtg gag ggc gcc	1895
Ser Gly Ala Lys Pro Ser Pro Gln Pro Ala Thr Trp Val Glu Gly Ala	

576	581	586	591	
tca agt ccc cgg cct cct tct agc ggt gct ggg ccg ggg tcc cgt cgg				1943
Ser Ser Pro Arg Pro Pro Ser Ser Gly Ala Gly Pro Gly Ser Arg Arg				
592	597	602	607	
aag ccc gcc agc cct ggg agg acc ctg cgc aac ggg cga ggc ggt gag				1991
Lys Pro Ala Ser Pro Gly Arg Thr Leu Arg Asn Gly Arg Gly Gly Glu				
608	613	618	623	
gcc gaa ccc ctg gac ctg tcc ttg cgg gca ggg ccg gga ggc gag gcc				2039
Ala Glu Pro Leu Asp Leu Ser Leu Arg Ala Gly Pro Gly Gly Glu Ala				
624	629	634	639	
ggg cct ggg ggt gcc ctc cac cgc tgc ctc ttc tgc ccg ttc gcc act				2087
Gly Pro Gly Gly Ala Leu His Arg Cys Leu Phe Cys Pro Phe Ala Thr				
640	645	650	655	
gga gcc cca gag ctc atg gcc ttg cac ctt caa gtg cac cac agc cgc				2135
Gly Ala Pro Glu Leu Met Ala Leu His Leu Gln Val His His Ser Arg				
656	661	666	671	
cgg gct agg ggc cgc cgg cca ccc cag gct gac gcg tcc ccg ccc tat				2183
Arg Ala Arg Gly Arg Arg Pro Pro Gln Ala Asp Ala Ser Pro Pro Tyr				
672	677	682	687	
gcc cga gta cca tca gga gag acc cct ccc agt cct tcg cag gaa ggg				2231
Ala Arg Val Pro Ser Gly Glu Thr Pro Pro Ser Pro Ser Gln Glu Gly				
688	693	698	703	
gag gag ggc tcc ggg ctg tcc aga ccc gga gag gca ggg ctg ggg ggg				2279
Glu Glu Gly Ser Gly Leu Ser Arg Pro Gly Glu Ala Gly Leu Gly Gly				
704	709	714	719	
caa gaa cgg tag tgg gccctcaggg gcgattagct tagtgagctt accccgcccgg				2334
Gln Glu Arg *				
720				
agcgggggag cgctagaggt agttgggtag agaagccagc agggggcagc gtgggaccca				2394
tatcccagcc ccaggcggac cagaggtgga aggcgcggcg ggcgtaggag ggtgggctgg				2454
cggtacccac ccagcccaag ggagtcacag tgccttagaa gtggcagagg tgaggggtcaa				2514
agaacgggggt ccctgggctg gcagagaagg tttgtgtccc tggtgaggag ccactctgcc				2574
agtctttgct ggtccatagg cgtgagagtt tatttttcta caaggggtga ggggtgggggg				2634
cactgtaccc ttctagcccc atcagggggc ctgtagacgt cgctattttt ggtacgattc				2694
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aaaaaaaaa a				2765

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (29) .. (643)

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agc ctc ctt gct cac ttt aca ggt tct gtg gcc tcc tac gag gtg act 100  
 Ser Leu Leu Ala His Phe Thr Gly Ser Val Ala Ser Tyr Glu Val Thr  
 9 14 19 24

cag tca ctc tca gtg tca gtg gcc ctg gga cag acg gcc agg att acc 148  
 Gln Ser Leu Ser Val Ser Val Ala Leu Gly Gln Thr Ala Arg Ile Thr  
 25 30 35 40

tgt ggg gga gac aac att gga agt aaa aat gta cac tgg tac caa cag 196  
 Cys Gly Gly Asp Asn Ile Gly Ser Lys Asn Val His Trp Tyr Gln Gln  
 41 46 51 56

aag cca ggc cag gcc cct gta ttg gtc atc tat agg gat acc aac cgg 244  
 Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr Arg Asp Thr Asn Arg  
 57 62 67 72

ccc cct ggg atc cct gag cga ttc tct ggc tcc aac tcg ggg aac acg 292  
 Pro Pro Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn Ser Gly Asn Thr  
 73 78 83 88

gcc acc ctg acc atc agc aga gcc caa gcc ggg gat gag gct gac tat 340  
 Ala Thr Leu Thr Ile Ser Arg Ala Gln Ala Gly Asp Glu Ala Asp Tyr  
 89 94 99 104

ttc tgt cag gtg tgg gac agt agc gcg tat gtg gtt ttc ggc gga ggg 388  
 Phe Cys Gln Val Trp Asp Ser Ser Ala Tyr Val Val Phe Gly Gly Gly  
 105 110 115 120

acc cag ctg acc gtc ctc ggt cag ccc aag gct gcc ccc tcg gtc act 436  
 Thr Gln Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr  
 121 126 131 136

ctg ttc cca ccc tcc tct gag gag ctt caa gcc aac aag gcc aca ctg 484  
 Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu  
 137 142 147 152

gtg tgt ctc ata agt gat ttt tac ccg gga gcc ggg aca gtg gcc tgg 532  
 Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly Ala Gly Thr Val Ala Trp  
 153 158 163 168

aag gca aaa aga agc ccc gtc aag gcg gga agg gga aac aac caa acc 580  
 Lys Ala Lys Arg Ser Pro Val Lys Ala Gly Arg Gly Asn Asn Gln Thr  
 169 174 179 184

ttt caa aaa aag gaa aga aca agg acc gcg ggc agc cat ctt acc tgg 628  
Phe Gln Lys Lys Glu Arg Thr Arg Thr Ala Gly Ser His Leu Thr Trp  
185 190 195 200

acc ccg acc ccc tga gccaggggac agccccacta aaacacttcc ggttccctcg 683  
Thr Pro Thr Pro \*  
201

tttccccctt gaaagtgttc ccccggggta aaaaaacctg ggccccctta caaaaaaggt 743

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tc 805

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ccagaggcag gg atg gtt ggc tat gac ccc aaa cca gat ggc agg aat 168  
Met Val Gly Tyr Asp Pro Lys Pro Asp Gly Arg Asn  
1 5 10

aac acc aag ttc cag gtg gca gtg gct ggg tct gtg tct gga ctt gtt 216  
Asn Thr Lys Phe Gln Val Ala Val Ala Gly Ser Val Ser Gly Leu Val  
13 18 23 28

act cgg gcg ctg atc agt ccc ttc gac gtc atc aag atc cgt ttc cag 264  
Thr Arg Ala Leu Ile Ser Pro Phe Asp Val Ile Lys Ile Arg Phe Gln  
29 34 39 44

ctt cag cat gag cgc ctg tct cgc agt gac ccc agc gca aag tac cat 312  
Leu Gln His Glu Arg Leu Ser Arg Ser Asp Pro Ser Ala Lys Tyr His  
45 50 55 60

ggc atc ctc cag ggc tct agg cag att ctg cag gag gag ggt ccg aca 360  
Gly Ile Leu Gln Gly Ser Arg Gln Ile Leu Gln Glu Glu Gly Pro Thr  
61 66 71 76

gct ttc tgg aaa gga cac gtc cca gct cag att ctc tcc ata ggc tat 408  
Ala Phe Trp Lys Gly His Val Pro Ala Gln Ile Leu Ser Ile Gly Tyr  
77 82 87 92

gga gct gtc caa ttc ttg tca ttt gaa atg ctg acg gag ctg gtc cac 456

Gly	Ala	Val	Gln	Phe	Leu	Ser	Phe	Glu	Met	Leu	Thr	Glu	Leu	Val	His	
93					98					103					108	
aga	ggc	agc	gtg	tac	gac	gcc	cgg	gaa	ttc	tca	gtg	cac	ttt	gta	tgt	504
Arg	Gly	Ser	Val	Tyr	Asp	Ala	Arg	Glu	Phe	Ser	Val	His	Phe	Val	Cys	
109					114					119					124	
ggg	ggc	ctg	gct	gcc	tgt	atg	gcc	acc	ctc	act	gtg	cac	ccc	gtg	gat	552
Gly	Gly	Leu	Ala	Ala	Cys	Met	Ala	Thr	Leu	Thr	Val	His	Pro	Val	Asp	
125					130					135					140	
gtt	ctg	cgc	acc	cgc	ttt	gca	gct	cag	ggg	gag	ccc	aag	gtc	tat	aat	600
Val	Leu	Arg	Thr	Arg	Phe	Ala	Ala	Gln	Gly	Glu	Pro	Lys	Val	Tyr	Asn	
141					146					151					156	
acg	ctg	cgc	cac	gcc	gtg	ggg	acc	atg	tat	agg	agc	gaa	ggc	ccc	cag	648
Thr	Leu	Arg	His	Ala	Val	Gly	Thr	Met	Tyr	Arg	Ser	Glu	Gly	Pro	Gln	
157					162					167					172	
gtt	ttc	tac	aaa	ggc	ttg	gct	ccc	acc	ttg	atc	gcc	atc	ttc	ccc	tac	696
Val	Phe	Tyr	Lys	Gly	Leu	Ala	Pro	Thr	Leu	Ile	Ala	Ile	Phe	Pro	Tyr	
173					178					183					188	
gcc	ggg	ctg	cag	ttc	tct	tgc	tac	agc	tcc	ttg	aag	cac	ctg	tac	aag	744
Ala	Gly	Leu	Gln	Phe	Ser	Cys	Tyr	Ser	Ser	Leu	Lys	His	Leu	Tyr	Lys	
189					194					199					204	
tgg	gcc	ata	cca	gcc	gaa	gga	aag	aaa	aat	gag	aac	ctc	caa	aac	ctg	792
Trp	Ala	Ile	Pro	Ala	Glu	Gly	Lys	Lys	Asn	Glu	Asn	Leu	Gln	Asn	Leu	
205					210					215					220	
ctt	tgt	ggc	agt	gga	gct	ggg	gtc	atc	agc	aag	acc	ctg	aca	tat	ccg	840
Leu	Cys	Gly	Ser	Gly	Ala	Gly	Val	Ile	Ser	Lys	Thr	Leu	Thr	Tyr	Pro	
221					226					231					236	
ctg	gac	ctc	ttc	aag	aag	cgg	cta	cag	gtt	gga	ggg	ttt	gag	cat	gcc	888
Leu	Asp	Leu	Phe	Lys	Lys	Arg	Leu	Gln	Val	Gly	Gly	Phe	Glu	His	Ala	
237					242					247					252	
aga	gct	gcc	ttt	ggc	cag	gta	cgg	aga	tac	aag	ggc	ctc	atg	gac	tgt	936
Arg	Ala	Ala	Phe	Gly	Gln	Val	Arg	Arg	Tyr	Lys	Gly	Leu	Met	Asp	Cys	
253					258					263					268	
gcc	aag	cag	gtg	ctg	caa	aag	gaa	ggc	gcc	ctg	ggc	ttc	ttc	aag	ggc	984
Ala	Lys	Gln	Val	Leu	Gln	Lys	Glu	Gly	Ala	Leu	Gly	Phe	Phe	Lys	Gly	
269					274					279					284	
ctg	tcc	ccc	agc	ttg	ctg	aag	gct	gcc	ctc	tcc	aca	ggc	ttc	atg	ttc	1032
Leu	Ser	Pro	Ser	Leu	Leu	Lys	Ala	Ala	Leu	Ser	Thr	Gly	Phe	Met	Phe	
285					290					295					300	
ttc	tcg	tat	gaa	ttc	ttc	tgt	aat	gtc	ttc	cac	tgc	atg	aac	agg	aca	1080
Phe	Ser	Tyr	Glu	Phe	Phe	Cys	Asn	Val	Phe	His	Cys	Met	Asn	Arg	Thr	
301					306					311					316	
gcc	agc	cag	cgc	tga	gcgcaggaag	gacccacaggt	cttccttgga	ggcagcctcc								1135
Ala	Ser	Gln	Arg	*												

317

tgaaggaagg aagattcagt ctccactgag aggtgcgctc tggcccttcc ctgcaggcca 1195  
 gctgccccaa gcggggtagc agccttgaac ccacccagct gggacaccac cagaaggtcc 1255  
 agggctctcc ccatgagaga atcagaggga atgcaggacg tggctctatgg tgagccaacg 1315  
 acacagtgag aaggagcagg aagttgctgt ttctcctctg accagcccac actccaaagg 1375  
 aaacagacgc catcctacac ctatcagccc tgctgccag gagaacagaa cacactcctg 1435  
 gtctggatgg ggctgctgct tgagtgcaga gggctgcggt aggccctttg caggagtcag 1495  
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 aaaaaaaaaa a 1566

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 <222> (352)..(2448)

<400> 64

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 atcagtagtg gactcagcga tgcctcagac aatctcagtt cagaagaatt caatgccagc 180  
 tctcactca actccctccc aagtactccc actgcttctc gcaggaactc aacaatagtg 240  
 ctacgcacag actcatagaa gcgctcactg gcagaaagtg ggctgagctg gtttagtgaa 300  
 tcagaggaga aagcccctaa aaaactggag tacgacagtg gtagcctgaa g atg gaa 357  
 Met Glu  
 1

cct ggg act tct aag tgg cgg agg gag cgg cct gag agc tgt gat gat 405  
 Pro Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu Ser Cys Asp Asp  
 3 8 13 18

tca tcc aag ggt gga gaa ctg aaa aag ccc atc agc ctg ggc cac cct 453  
 Ser Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser Leu Gly His Pro  
 19 24 29 34

ggc tcc ctg aag aag ggc aag acc cca cct gtg gct gta act tcc ccc 501  
 Gly Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala Val Thr Ser Pro  
 35 40 45 50



atc act cac aca gcc cag agt gcc ctc aaa gtc gca ggc aaa cct gag	549
Ile Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala Gly Lys Pro Glu	
51 56 61 66	
ggc aaa gct aca gac aag ggt aag ctt gca gtg aag aat act ggg ctc	597
Gly Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys Asn Thr Gly Leu	
67 72 77 82	
caa cgc tcc tcc tct gat gct ggt cgg gac cgc ctg agt gat gct aag	645
Gln Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu Ser Asp Ala Lys	
83 88 93 98	
aag ccc ccc tcg ggc att gct cgc ccc tcc act tcg gga tcc ttt ggc	693
Lys Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser Gly Ser Phe Gly	
99 104 109 114	
tac aag aag cct cct cct gcc aca ggc aca gcc act gtc atg caa act	741
Tyr Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr Val Met Gln Thr	
115 120 125 130	
ggg ggt tca gcc act ctc agc aag atc cag aag tcc tca ggc atc cct	789
Gly Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser Ser Gly Ile Pro	
131 136 141 146	
gtc aag cca gta aat ggg cgc aag act agc tta gat gtt tcc aac agt	837
Val Lys Pro Val Asn Gly Arg Lys Thr Ser Leu Asp Val Ser Asn Ser	
147 152 157 162	
gca gag cca gga ttc ctg gct cct gga gcc cgt tct aac atc cag tac	885
Ala Glu Pro Gly Phe Leu Ala Pro Gly Ala Arg Ser Asn Ile Gln Tyr	
163 168 173 178	
cgc agc ctg ccc cgg cca gcc aag tca agt tct atg agc gtg acc ggc	933
Arg Ser Leu Pro Arg Pro Ala Lys Ser Ser Ser Met Ser Val Thr Gly	
179 184 189 194	
ggg cgg ggt gga cct cgc cct gtg agc agc agc att gac ccc agt ctc	981
Gly Arg Gly Gly Pro Arg Pro Val Ser Ser Ser Ile Asp Pro Ser Leu	
195 200 205 210	
ctc agc acc aag cag gga ggc ctt acg cct tcc aga ctg aag gag cct	1029
Leu Ser Thr Lys Gln Gly Gly Leu Thr Pro Ser Arg Leu Lys Glu Pro	
211 216 221 226	
acc aag gta gcc agt ggg cgg acc act cca gcc cct gtc aat cag aca	1077
Thr Lys Val Ala Ser Gly Arg Thr Thr Pro Ala Pro Val Asn Gln Thr	
227 232 237 242	
gat cgg gaa aag gag aag gcc aaa gcc aag gca gtg gcc ttg gac tca	1125
Asp Arg Glu Lys Glu Lys Ala Lys Ala Lys Ala Val Ala Leu Asp Ser	
243 248 253 258	
gac aac atc tcc ttg aag agt att ggc tcc cca gaa agt act ccc aag	1173
Asp Asn Ile Ser Leu Lys Ser Ile Gly Ser Pro Glu Ser Thr Pro Lys	
259 264 269 274	
aac caa gca agc cac ccc aca gcc acc aag ctg gca gag ctg cca cca	1221

Asn Gln Ala Ser His Pro Thr Ala Thr Lys Leu Ala Glu Leu Pro Pro	
275 280 285 290	
acc cct ctc agg gcc aca gcg aag agc ttt gtc aaa cca ccc tca cta	1269
Thr Pro Leu Arg Ala Thr Ala Lys Ser Phe Val Lys Pro Pro Ser Leu	
291 296 301 306	
gcc aat ctt gac aag gtc aac tcc aac agt ctg gat cta cca tca tcc	1317
Ala Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp Leu Pro Ser Ser	
307 312 317 322	
agt gat acc acc cat gct tca aag gtc cca gat ctg cat gct aca agc	1365
Ser Asp Thr Thr His Ala Ser Lys Val Pro Asp Leu His Ala Thr Ser	
323 328 333 338	
tca gca tct ggg ggc cct ctc cct tcc tgc ttc acc ccc agt ccg gca	1413
Ser Ala Ser Gly Gly Pro Leu Pro Ser Cys Phe Thr Pro Ser Pro Ala	
339 344 349 354	
ccc atc ctc aat att aac tca gcc agc ttc tcc cag ggc ctg gag cta	1461
Pro Ile Leu Asn Ile Asn Ser Ala Ser Phe Ser Gln Gly Leu Glu Leu	
355 360 365 370	
atg agt ggt ttc agt gtg cca aaa gag acc cgc atg tac ccc aaa ctc	1509
Met Ser Gly Phe Ser Val Pro Lys Glu Thr Arg Met Tyr Pro Lys Leu	
371 376 381 386	
tca ggc ctg cac agg agc atg gag tcc ctc cag atg cca atg agc ctc	1557
Ser Gly Leu His Arg Ser Met Glu Ser Leu Gln Met Pro Met Ser Leu	
387 392 397 402	
ccc agt gcc ttc ccc agc agt act ccc gtc ccc acc cca cct gct ccc	1605
Pro Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr Pro Pro Ala Pro	
403 408 413 418	
cct gct gct ccc aca gaa gaa gag acg gaa gag ctg act tgg agt gga	1653
Pro Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu Thr Trp Ser Gly	
419 424 429 434	
agc ccc aga gct ggg caa ctg gac agt aat cag cgg gat cgg aac act	1701
Ser Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg Asp Arg Asn Thr	
435 440 445 450	
ctt ccc aag aaa ggg ctc agg tac cag ctt cag tcc cag gag gag acc	1749
Leu Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser Gln Glu Glu Thr	
451 456 461 466	
aag gag agg cga cat tcc cat acc att ggt ggg ctg cct gaa tcc gat	1797
Lys Glu Arg Arg His Ser His Thr Ile Gly Gly Leu Pro Glu Ser Asp	
467 472 477 482	
gac cag tca gag ctg cct tct ccc cct gca ctt ccc atg tct ctg agt	1845
Asp Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro Met Ser Leu Ser	
483 488 493 498	
gca aag ggc caa ctt acc aac ata gtg agt ccc act gcg gcc acc acg	1893
Ala Lys Gly Gln Leu Thr Asn Ile Val Ser Pro Thr Ala Ala Thr Thr	

499	504	509	514	
cca aga atc acc cgc tcc aac agc atc ccc acc cac gag gcg gcc ttc				1941
Pro Arg Ile Thr Arg Ser Asn Ser Ile Pro Thr His Glu Ala Ala Phe				
515	520	525	530	
gag ctg tac agc ggc tcc caa atg ggg agc acc ctg tcc ctg gcc gag				1989
Glu Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu Ser Leu Ala Glu				
531	536	541	546	
aga ccc aag gga atg att cgg tca gga tcc ttc cga gac ccc acg gac				2037
Arg Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg Asp Pro Thr Asp				
547	552	557	562	
gat gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt gcc tcc tcc acc				2085
Asp Val His Gly Ser Val Leu Ser Leu Ala Ser Ser Ala Ser Ser Thr				
563	568	573	578	
tac tcc tca caa atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag				2133
Tyr Ser Ser Gln Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln				
579	584	589	594	
gaa aaa gtg gcc acc ttg acg tct cag ctt tct gcc aat gct aat ctg				2181
Glu Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu				
595	600	605	610	
gtg gct gct ttt gag cag agc ctg gtg aat atg aca tcc cgc ctg cga				2229
Val Ala Ala Phe Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg				
611	616	621	626	
cac ctg gca gag acg gcc gag gag aag gac act gag ctg ctg gat ttg				2277
His Leu Ala Glu Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu				
627	632	637	642	
cga gaa acc ata gac ttt ctg aag aaa aag aac tct gag gcc cag gca				2325
Arg Glu Thr Ile Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala				
643	648	653	658	
gtc att cag gga gcc ctt aat gcc tca gaa acc aca ccc aaa ggt agg				2373
Val Ile Gln Gly Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Gly Arg				
659	664	669	674	
aca tcc agc cac aga ttg aga ggg aac agg gag cag gaa agt aag agt				2421
Thr Ser Ser His Arg Leu Arg Gly Asn Arg Glu Gln Glu Ser Lys Ser				
675	680	685	690	
att aca gat ttt tat ctg ggc cca tag				2448
Ile Thr Asp Phe Tyr Leu Gly Pro *				
691	696			

<210> 65  
 <211> 2155  
 <212> DNA

<213> Homo sapiens

<220>

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<222> (143)..(2032)

<220>

<221> misc\_feature

<222> (1)...(2155)

<223> n = a,t,c or g

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atgtgtgaat attcatcagc atttgcttgt ggaacgctca cctctgcttt ttactcttgc 120

cgaaaactgt attgatcaag tg atg aaa cta cag aat ctg ttt gta gat gat 172  
Met Lys Leu Gln Asn Leu Phe Val Asp Asp

1 5

tca ggt cga tat ttg gct att caa ttc cat ctg gaa tgt gca tat gtg 220

Ser Gly Arg Tyr Leu Ala Ile Gln Phe His Leu Glu Cys Ala Tyr Val  
11 16 21 26

ttt tta tat tat tat gag tac aga aaa gca aaa gat cag ttg gat att 268

Phe Leu Tyr Tyr Tyr Glu Tyr Arg Lys Ala Lys Asp Gln Leu Asp Ile  
27 32 37 42

gct aag gac atc agc caa tta caa att gat ttg aca ggt gct ttg gga 316

Ala Lys Asp Ile Ser Gln Leu Gln Ile Asp Leu Thr Gly Ala Leu Gly  
43 48 53 58

aaa aga aca cgg ttc cag gaa aat tat gtg gca caa ctg att cta gat 364

Lys Arg Thr Arg Phe Gln Glu Asn Tyr Val Ala Gln Leu Ile Leu Asp  
59 64 69 74

gta aga agg gaa ggg gat gtc ctt tca aat tgt gaa ttc act cca gca 412

Val Arg Arg Glu Gly Asp Val Leu Ser Asn Cys Glu Phe Thr Pro Ala  
75 80 85 90

ccc act cct cag gaa cat tta acc aag aat ctt gag ctc aat gat gac 460

Pro Thr Pro Gln Glu His Leu Thr Lys Asn Leu Glu Leu Asn Asp Asp  
91 96 101 106

acc att ctg aat gac ata aag tta gca gat tgt gaa cag ttc cag atg 508

Thr Ile Leu Asn Asp Ile Lys Leu Ala Asp Cys Glu Gln Phe Gln Met  
107 112 117 122

ccg gat ctg tgt gct gaa gag atc gct att att ctt gga atc tgc act 556

Pro Asp Leu Cys Ala Glu Glu Ile Ala Ile Ile Leu Gly Ile Cys Thr  
123 128 133 138

aat ttt caa aag aat aac cca gtg cac aca tta act gaa gtg gag ctt 604

Asn Phe Gln Lys Asn Asn Pro Val His Thr Leu Thr Glu Val Glu Leu  
139 144 149 154

ctg gca ttt aca tca tgt ttg ctt tca caa cca aag ttc tgg gcc att 652



379	384	389	394	
aaa caa aaa gta aaa gct ttt aga act tta caa gaa gct ctc aag tgt				1372
Lys Gln Lys Val Lys Ala Phe Arg Thr Leu Gln Glu Ala Leu Lys Cys				
395	400	405	410	
aac tat gaa cac tgg cag att tgg gaa aac tac atc ctc acc agc act				1420
Asn Tyr Glu His Trp Gln Ile Trp Glu Asn Tyr Ile Leu Thr Ser Thr				
411	416	421	426	
gac gtt ggg gaa ttt tca gaa gcc att aaa gct tat cac cgg ctc ttg				1468
Asp Val Gly Glu Phe Ser Glu Ala Ile Lys Ala Tyr His Arg Leu Leu				
427	432	437	442	
gac tta cgt gac aaa tac aaa gat gtt cag gtc ctt aaa att cta gtc				1516
Asp Leu Arg Asp Lys Tyr Lys Asp Val Gln Val Leu Lys Ile Leu Val				
443	448	453	458	
agg gca gtg att gat ggg atg act gat cga agt gga gat gtt gca act				1564
Arg Ala Val Ile Asp Gly Met Thr Asp Arg Ser Gly Asp Val Ala Thr				
459	464	469	474	
ggc ctc aaa gga aag ctg cag gag tta ttt ggc aga gtg act tca aga				1612
Gly Leu Lys Gly Lys Leu Gln Glu Leu Phe Gly Arg Val Thr Ser Arg				
475	480	485	490	
gtg aca aat gat gga gaa atc tgg agg ctg tat gcc cac gta tat gga				1660
Val Thr Asn Asp Gly Glu Ile Trp Arg Leu Tyr Ala His Val Tyr Gly				
491	496	501	506	
aat ggg cag agt gaa aag cct gat gaa aat gaa aag gca ttc cag tgc				1708
Asn Gly Gln Ser Glu Lys Pro Asp Glu Asn Glu Lys Ala Phe Gln Cys				
507	512	517	522	
ctc tca aag gca tac aag tgt gac acc cag tcc aat tgt tgg gag aaa				1756
Leu Ser Lys Ala Tyr Lys Cys Asp Thr Gln Ser Asn Cys Trp Glu Lys				
523	528	533	538	
gat att aca tca ttt aag gaa gtt gtt caa aga gcc tta gga ctt gca				1804
Asp Ile Thr Ser Phe Lys Glu Val Val Gln Arg Ala Leu Gly Leu Ala				
539	544	549	554	
cat gtg gcc ata aaa tgc agt aaa aac aaa tcc agt tcc caa gaa gct				1852
His Val Ala Ile Lys Cys Ser Lys Asn Lys Ser Ser Ser Gln Glu Ala				
555	560	565	570	
gta caa atg ctt tct tct gtt cga ctc aat tta cgg ggc ttg tta tct				1900
Val Gln Met Leu Ser Ser Val Arg Leu Asn Leu Arg Gly Leu Leu Ser				
571	576	581	586	
aaa gca aag caa ctt ttt aca gat gtg gca act gga gaa atg tcc agg				1948
Lys Ala Lys Gln Leu Phe Thr Asp Val Ala Thr Gly Glu Met Ser Arg				
587	592	597	602	
gaa tta gct gat gac ata aca gct atg gac acc tta gtg aca gag ctc				1996
Glu Leu Ala Asp Asp Ile Thr Ala Met Asp Thr Leu Val Thr Glu Leu				
603	608	613	618	

caa gac cta agc aac cag ttt cga aat cag tat tga ttct gctggaagca 2046  
 Gln Asp Leu Ser Asn Gln Phe Arg Asn Gln Tyr \*  
 619 624 629

gattctggaa aaggtgcttt cacctgctgg taaaagatac atctgtatat ctgaaatgca 2106

agatattgat ttttaaaata aatttgtttt atgacttaaa aaaaaaaaaa 2155

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 <222> (56)..(2224)

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 Met  
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tac cgc gcg ctg tac gcg ttc cgc tcg gcg gag ccc aac gcg ctg gcg 106  
 Tyr Arg Ala Leu Tyr Ala Phe Arg Ser Ala Glu Pro Asn Ala Leu Ala  
 2 7 12 17

ttc gcc gcg ggc gag acc ttc ctg gtg cta gag cga agc agc gcg cac 154  
 Phe Ala Ala Gly Glu Thr Phe Leu Val Leu Glu Arg Ser Ser Ala His  
 18 23 28 33

tgg tgg ctg gcc gcg cgg gcg cgc agt ggt gag acg ggc tac gtg ccg 202  
 Trp Trp Leu Ala Ala Arg Ala Arg Ser Gly Glu Thr Gly Tyr Val Pro  
 34 39 44 49

cca gcc tac ctg cgc cgc ctg cag ggc ctg gag cag gat gtc ctc cag 250  
 Pro Ala Tyr Leu Arg Arg Leu Gln Gly Leu Glu Gln Asp Val Leu Gln  
 50 55 60 65

gcc att gac cgg gcc atc gag gct gta cac aac aca gcc atg cgg gat 298  
 Ala Ile Asp Arg Ala Ile Glu Ala Val His Asn Thr Ala Met Arg Asp  
 66 71 76 81

ggt ggc aag tac agc ctg gaa cag cgt gga gtc ctc cag aag ctg atc 346  
 Gly Gly Lys Tyr Ser Leu Glu Gln Arg Gly Val Leu Gln Lys Leu Ile  
 82 87 92 97

cac cac cgg aaa gag acc ctg tca cgc aga ggc cct tca gcc tcc agt 394  
 His His Arg Lys Glu Thr Leu Ser Arg Arg Gly Pro Ser Ala Ser Ser

98	103	108	113	
gtt gca gtt atg acc tca tca acc agt gac cac cac ttg gat gct gct				442
Val Ala Val Met Thr Ser Ser Thr Ser Asp His His Leu Asp Ala Ala				
114	119	124	129	
gca gcc agg cag ccc aat ggg gtg tgt cga gct ggg ttc gag cgg cag				490
Ala Ala Arg Gln Pro Asn Gly Val Cys Arg Ala Gly Phe Glu Arg Gln				
130	135	140	145	
cac agc cta ccc agt tct gag cat ctt ggg gca gat gga ggc ctc tac				538
His Ser Leu Pro Ser Ser Glu His Leu Gly Ala Asp Gly Gly Leu Tyr				
146	151	156	161	
cag atc cca ctt cca tct tcc cag atc cca cca cag cct cgc cga gca				586
Gln Ile Pro Leu Pro Ser Ser Gln Ile Pro Pro Gln Pro Arg Arg Ala				
162	167	172	177	
gca ccc acc aca ccg ccc cca cca gtg aag cgc cga gac cgc gag gcc				634
Ala Pro Thr Thr Pro Pro Pro Pro Val Lys Arg Arg Asp Arg Glu Ala				
178	183	188	193	
ctg atg gcc tct ggg agt ggt ggc cac aac acc atg ccc tcc ggg ggt				682
Leu Met Ala Ser Gly Ser Gly Gly His Asn Thr Met Pro Ser Gly Gly				
194	199	204	209	
aac tct gtg tcc agc ggc tcc tca gtc agc agc acc tcc ctg gac acg				730
Asn Ser Val Ser Ser Gly Ser Ser Val Ser Ser Thr Ser Leu Asp Thr				
210	215	220	225	
ctc tat acc agc tcc agc cca tct gaa cca ggc tcc agc tgc tca ccc				778
Leu Tyr Thr Ser Ser Ser Pro Ser Glu Pro Gly Ser Ser Cys Ser Pro				
226	231	236	241	
aca ccc cca cct gtg ccc cgc cga ggc acc cac acc acc gtg tcc caa				826
Thr Pro Pro Pro Val Pro Arg Arg Gly Thr His Thr Thr Val Ser Gln				
242	247	252	257	
gtc cag ccc cct ccc tcc aag gca tca gca cct gaa ccc cct gca gaa				874
Val Gln Pro Pro Pro Ser Lys Ala Ser Ala Pro Glu Pro Pro Ala Glu				
258	263	268	273	
gaa gaa gtg gca act ggt aca acc tca gcc tct gat gac ctg gaa gcc				922
Glu Glu Val Ala Thr Gly Thr Thr Ser Ala Ser Asp Asp Leu Glu Ala				
274	279	284	289	
ctg ggt aca ctg agc ctg ggg acc aca gag gag aag gca gca gct gag				970
Leu Gly Thr Leu Ser Leu Gly Thr Thr Glu Glu Lys Ala Ala Ala Glu				
290	295	300	305	
gcg gct gtg ccc agg acc att ggg gcc gag ctg atg gag ctg gtg cgg				1018
Ala Ala Val Pro Arg Thr Ile Gly Ala Glu Leu Met Glu Leu Val Arg				
306	311	316	321	
aga aac act ggc ctg agc cac gaa tta tgc cgg gtg gcc atc ggc atc				1066
Arg Asn Thr Gly Leu Ser His Glu Leu Cys Arg Val Ala Ile Gly Ile				
322	327	332	337	



ata	gtg	ggt	cac	atc	cag	gcc	tcg	gtg	ccg	gcc	agc	tca	cca	gtc	atg	1114
Ile	Val	Gly	His	Ile	Gln	Ala	Ser	Val	Pro	Ala	Ser	Ser	Pro	Val	Met	
338					343					348					353	
gag	cag	gtc	ctc	ctc	tca	ctc	gta	gag	ggc	aag	gac	ctc	agc	atg	gcc	1162
Glu	Gln	Val	Leu	Leu	Ser	Leu	Val	Glu	Gly	Lys	Asp	Leu	Ser	Met	Ala	
354					359					364					369	
ctg	ccc	tca	ggg	cag	gtc	tgc	cac	gac	cag	cag	agg	ctg	gag	gtg	atc	1210
Leu	Pro	Ser	Gly	Gln	Val	Cys	His	Asp	Gln	Gln	Arg	Leu	Glu	Val	Ile	
370					375					380					385	
ttt	gca	gac	ctg	gct	cgc	cgg	aag	gac	gac	gcc	cag	cag	cgc	agt	tgg	1258
Phe	Ala	Asp	Leu	Ala	Arg	Arg	Lys	Asp	Asp	Ala	Gln	Gln	Arg	Ser	Trp	
386					391					396					401	
gca	cta	tat	gag	gat	gag	ggt	gtc	atc	cgc	tgc	tac	cta	gag	gag	ctg	1306
Ala	Leu	Tyr	Glu	Asp	Glu	Gly	Val	Ile	Arg	Cys	Tyr	Leu	Glu	Glu	Leu	
402					407					412					417	
ctg	cat	att	ctg	act	gat	gca	gac	cct	gaa	gtt	tgc	aag	aaa	atg	tgc	1354
Leu	His	Ile	Leu	Thr	Asp	Ala	Asp	Pro	Glu	Val	Cys	Lys	Lys	Met	Cys	
418					423					428					433	
aag	aga	aac	gag	ttc	gag	tct	gtc	ctg	gcc	ttg	gtg	gcc	tat	tac	caa	1402
Lys	Arg	Asn	Glu	Phe	Glu	Ser	Val	Leu	Ala	Leu	Val	Ala	Tyr	Tyr	Gln	
434					439					444					449	
atg	gaa	cac	cga	gca	tca	ctg	cgg	ctg	ctg	ctc	ctc	aag	tgc	ttt	ggc	1450
Met	Glu	His	Arg	Ala	Ser	Leu	Arg	Leu	Leu	Leu	Leu	Lys	Cys	Phe	Gly	
450					455					460					465	
gcc	atg	tgc	agc	ctg	gat	gca	gcc	atc	atc	tcc	acg	ctt	gtg	tca	tcc	1498
Ala	Met	Cys	Ser	Leu	Asp	Ala	Ala	Ile	Ile	Ser	Thr	Leu	Val	Ser	Ser	
466					471					476					481	
gtg	ctg	cct	gta	gag	ctg	gcg	agg	gac	atg	cag	aca	gac	acg	cag	gac	1546
Val	Leu	Pro	Val	Glu	Leu	Ala	Arg	Asp	Met	Gln	Thr	Asp	Thr	Gln	Asp	
482					487					492					497	
cac	cag	aaa	ctc	tgt	tac	tct	gcc	ctc	atc	ctg	gcc	atg	gtc	ttc	tcc	1594
His	Gln	Lys	Leu	Cys	Tyr	Ser	Ala	Leu	Ile	Leu	Ala	Met	Val	Phe	Ser	
498					503					508					513	
atg	gga	gag	gca	gtg	ccc	tat	gca	cac	tat	gag	cac	ctg	ggc	acg	cct	1642
Met	Gly	Glu	Ala	Val	Pro	Tyr	Ala	His	Tyr	Glu	His	Leu	Gly	Thr	Pro	
514					519					524					529	
ttc	gcc	cag	ttc	cta	ctg	aac	atc	gtc	gag	gat	ggg	ctg	ccc	ttg	gac	1690
Phe	Ala	Gln	Phe	Leu	Leu	Asn	Ile	Val	Glu	Asp	Gly	Leu	Pro	Leu	Asp	
530					535					540					545	
acc	aca	gag	cag	ctg	ccg	gac	ctc	tgc	gtg	aac	ctg	ctt	ctg	gct	ctc	1738
Thr	Thr	Glu	Gln	Leu	Pro	Asp	Leu	Cys	Val	Asn	Leu	Leu	Leu	Ala	Leu	
546					551					556					561	

aac ctg cac ctg cca gct gct gac cag aat gtc atc atg gct gcc ctg	1786
Asn Leu His Leu Pro Ala Ala Asp Gln Asn Val Ile Met Ala Ala Leu	
562 567 572 577	
agc aaa cac gcc aat gtc aag atc ttc tcc gag aag ctg ttg ttg ctc	1834
Ser Lys His Ala Asn Val Lys Ile Phe Ser Glu Lys Leu Leu Leu Leu	
578 583 588 593	
ctg aac aga ggg gat gac cct gtg cgc atc ttc aaa cat gag cca cag	1882
Leu Asn Arg Gly Asp Asp Pro Val Arg Ile Phe Lys His Glu Pro Gln	
594 599 604 609	
cca cca cac tct gtc ctc aag ttc ctg cag gac gtg ttt ggc agc ccg	1930
Pro Pro His Ser Val Leu Lys Phe Leu Gln Asp Val Phe Gly Ser Pro	
610 615 620 625	
gcc aca gct gcc atc ttc tac cac aca gac atg atg gct ctc att gac	1978
Ala Thr Ala Ala Ile Phe Tyr His Thr Asp Met Met Ala Leu Ile Asp	
626 631 636 641	
atc act gtg cgg cac atc gca gac ctg tca cca gga gac aag ctg cgc	2026
Ile Thr Val Arg His Ile Ala Asp Leu Ser Pro Gly Asp Lys Leu Arg	
642 647 652 657	
atg gag tac ctc tcc ctg atg cat gct ata gtc cgc acc aca ccc tac	2074
Met Glu Tyr Leu Ser Leu Met His Ala Ile Val Arg Thr Thr Pro Tyr	
658 663 668 673	
ctg cag cac cgc cac cgg cta ccc gac ctg cag gcc ata ctg cga cgc	2122
Leu Gln His Arg His Arg Leu Pro Asp Leu Gln Ala Ile Leu Arg Arg	
674 679 684 689	
atc ctg aat gag gag gag acc tca ccc cag tgc cag atg gac cgc atg	2170
Ile Leu Asn Glu Glu Glu Thr Ser Pro Gln Cys Gln Met Asp Arg Met	
690 695 700 705	
att gtc cga gag atg tgc aag gaa ttc ctg gtg ctg ggg gag gct ccc	2218
Ile Val Arg Glu Met Cys Lys Glu Phe Leu Val Leu Gly Glu Ala Pro	
706 711 716 721	
agc tag caccttgctg tctcccttc cctgcagctc cagtcagtgt gcaggggact	2274
Ser *	
722	
caggggcttg gccctaagaa tgttttgcac tgacagtggg aggggataag gtggcangaa	2334
ggaacctgag caggaccccc acctgaagta gaacttaaga gaggggccaa gtgtangatt	2394
ggggaccatg gtctgggagc tgttctgggg cangggggaa tatgcaagct aaaagccct	2454
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[illegible]

<213> Homo sapiens

<221> CDS

<222> (386) .. (2194)

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gattccagcca ctttggcctc acaaagtgct gggattatag gcaagagcga tggcgcccgg 180

cccactcagc aggattccta gaatgggcac gagctctgcc ctcatcacag tccaaaagtg 240

agcacctgcc tggagctgcc cagaaacagc cttgtggggg ggggttggtg tctgacctcc 300

ctccccgggg qccttcgcag gcttctctgc tgggtgcttct gtgcctgtgg gtctggattc 360

ctccagggcc tgatcctggg tgcag atg cag ctg gaa gcc ctg aac ctg ctg 412  
Met Gln Leu Glu Ala Leu Asn Leu Leu  
1 5

cac aca cta gtc tgg gca cgg agt ctc tgc cgt gcc gga gct gtg cag 460  
 His Thr Leu Val Trp Ala Arg Ser Leu Cys Arg Ala Gly Ala Val Gln  
 10 15 20 25

aca cag gag cgg ctg tca ggc agt gcc agc cct gag caa gtg cca gct 508  
Thr Gln Glu Arg Leu Ser Gly Ser Ala Ser Pro Glu Gln Val Pro Ala  
26 31 36 41

ggt gag tgc tgt gct ctg cag gag tat gag gcc gcc gtg gag cag ctc 556  
Gly Glu Cys Cys Ala Leu Gln Glu Tyr Glu Ala Ala Val Glu Gln Leu  
42 47 52 57

aag agc gag cag atc cgg gcg cag gct gag gag agg agg aag acc ctg 604  
Lys Ser Glu Gln Ile Arg Ala Gln Ala Glu Glu Arg Arg Lys Thr Leu  
58 63 68 73

agc gag gag acc cgg cag cac cag gcc agg gcc cag tat caa gac aag 652  
 Ser Glu Glu Thr Arg Gln His Gln Ala Arg Ala Gln Tyr Gln Asp Lys  
 74 79 84 89

ctg gcc cgg cag cgc tac gag gac caa ctg aag cag cag caa ctt ctc 700  
Leu Ala Arg Gln Arg Tyr Glu Asp Gln Leu Lys Gln Gln Gln Leu Leu  
90 95 100 105

aat gag gag aat tta cgg aag cag gag gag tcc gtg cag aag cag gaa 748  
Asn Glu Glu Asn Leu Arg Lys Gln Glu Glu Ser Val Gln Lys Gln Glu  
106 111 116 121

gcc atg cgg cga gcc acc gtg gag cgg gag atg gag ctg cgg cac aag 796  
Ala Met Arg Arg Ala Thr Val Glu Arg Glu Met Glu Leu Arg His Lys  
122 / 127 132 137

aat gag atg ctg cga gtg gag acc gag gcc cgg gcg cgc gcc aag gcc 844



gag ata agc aag gac ctc aga gcc aca ctg aac gcc ttc ctg tac cac	1564
Glu Ile Ser Lys Asp Leu Arg Ala Thr Leu Asn Ala Phe Leu Tyr His	
378 383 388 393	
atg ggc caa cac agc aac aaa ttc atg ctg gtc ctg gcc agc aat ctg	1612
Met Gly Gln His Ser Asn Lys Phe Met Leu Val Leu Ala Ser Asn Leu	
394 399 404 409	
cct gag cag ttc gac tgt gcc atc aac agc cgc att gac gtg atg gtc	1660
Pro Glu Gln Phe Asp Cys Ala Ile Asn Ser Arg Ile Asp Val Met Val	
410 415 420 425	
cac ttc gac ctg ccg cag cag gag gag cgg gag cgc ctg gtg aga ctg	1708
His Phe Asp Leu Pro Gln Gln Glu Glu Arg Glu Arg Leu Val Arg Leu	
426 431 436 441	
cat ttt gac aac tgt gtt ctt aag ccg gcc aca gaa gga aaa cgg cgc	1756
His Phe Asp Asn Cys Val Leu Lys Pro Ala Thr Glu Gly Lys Arg Arg	
442 447 452 457	
ctg aag ctg gcc cag ttt gac tac ggg agg aag tgc tcg gag gtc gct	1804
Leu Lys Leu Ala Gln Phe Asp Tyr Gly Arg Lys Cys Ser Glu Val Ala	
458 463 468 473	
cgg ctg acg gag ggc atg tgc ggc cgg gag atc gct cag ctg gcc gtg	1852
Arg Leu Thr Glu Gly Met Ser Gly Arg Glu Ile Ala Gln Leu Ala Val	
474 479 484 489	
tcc tgg cag gcc acg gca tat gcc tcc aag gac ggg gtc ctc act gag	1900
Ser Trp Gln Ala Thr Ala Tyr Ala Ser Lys Asp Gly Val Leu Thr Glu	
490 495 500 505	
gcc atg atg gac gcc tgt gtg caa gat gct gtc cag cag tac cga cag	1948
Ala Met Met Asp Ala Cys Val Gln Asp Ala Val Gln Gln Tyr Arg Gln	
506 511 516 521	
aag atg cgc tgg ctg aag gcg gag ggg cct ggg cgc cgg gtc gag cac	1996
Lys Met Arg Trp Leu Lys Ala Glu Gly Pro Gly Arg Arg Val Glu His	
522 527 532 537	
ccc cta tcc gga gtc caa ggc gag acc ctc acc tca tgg agc ctg gcc	2044
Pro Leu Ser Gly Val Gln Gly Glu Thr Leu Thr Ser Trp Ser Leu Ala	
538 543 548 553	
acg gac ccc tcc tac ccc tgc ctt gcc ggc ccc tgc aca ttt agg ata	2092
Thr Asp Pro Ser Tyr Pro Cys Leu Ala Gly Pro Cys Thr Phe Arg Ile	
554 559 564 569	
tgc tcc tgg atg ggg act ggg ctg tgc cca ggg cct ctg tcc ccc agg	2140
Cys Ser Trp Met Gly Thr Gly Leu Cys Pro Gly Pro Leu Ser Pro Arg	
570 575 580 585	
atg tct tgt ggt ggc ggt cgg ccg ttc tgc ccc cca ggg cac ccc ctg	2188
Met Ser Cys Gly Gly Gly Arg Pro Phe Cys Pro Pro Gly His Pro Leu	
586 591 596 601	

ttg tag gcaactggcta gggaggggca ggcctccttc ctgcccctcg agacactctt 2244  
 Leu \*  
 602  
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 gcccaggcca ctgtgagggt ggggtgctggc tgagcccctg gggcagaagg agtggggcag 2364  
 gcgggggtctt tgttctcggc tcccacagca gagccagggt aggggggggc tgccaggact 2424  
 agacagaagt ggggcggcct gaaccctgct tccagccatg gccagggggc acggaacccg 2484  
 gcaggggtgt ctgaagccgc cctgtcagct ggccgggtcca agcctgtggc tggagctggt 2544  
 gtgtgtttat ctaataaagt cccacagggt cctcaaaaaa aaaaaa 2590

<210> 68  
 <211> 1956  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (76)..(1665)

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 Met Val Lys Asn Leu Ser Gly Tyr Ser Glu Ser Cys  
 1 5 10  
 aag ctc cta gtg tct cct ctg ggt gga cgc cta ggc gca cgg ccg tta 159  
 Lys Leu Leu Val Ser Pro Leu Gly Gly Arg Leu Gly Ala Arg Pro Leu  
 13 18 23 28  
 ctt ctc ttt cac ctg tgg att cgt cag ttt ctc gtt cgt ttc agg agg 207  
 Leu Leu Phe His Leu Trp Ile Arg Gln Phe Leu Val Arg Phe Arg Arg  
 29 34 39 44  
 cga tcc cgc gcc ctg ggt gcg gtg agg ccg ctg gga cag cgg agg tgc 255  
 Arg Ser Arg Ala Leu Gly Ala Val Arg Pro Leu Gly Gln Arg Arg Cys  
 45 50 55 60  
 ctc ccg acg cga agc agc gag ctg agg cgg cgg cca gcg ggg aag atg 303  
 Leu Pro Thr Arg Ser Ser Glu Leu Arg Arg Arg Pro Ala Gly Lys Met  
 61 66 71 76

agc ggc agc agc gcc agg tcc agc cac ctg tct cag ccc gtc gtg aag	351
Ser Gly Ser Ser Ala Arg Ser Ser His Leu Ser Gln Pro Val Val Lys	
77 82 87 92	
agc gtg ctt gtg tac cgc aac ggg gac ccc ttc tac gcg ggg cgc cgc	399
Ser Val Leu Val Tyr Arg Asn Gly Asp Pro Phe Tyr Ala Gly Arg Arg	
93 98 103 108	
gtc gtc atc cat gag aag aag gtg tcc agc ttc gaa gtc ttc ctg aag	447
Val Val Ile His Glu Lys Lys Val Ser Ser Phe Glu Val Phe Leu Lys	
109 114 119 124	
gag gtg acc ggc ggc gtt cag gca ccc ttt ggg ggc gtc agg aac atc	495
Glu Val Thr Gly Gly Val Gln Ala Pro Phe Gly Ala Val Arg Asn Ile	
125 130 135 140	
tac acc ccg cgg act ggc cac cga atc cgg aag cta gac cag atc cag	543
Tyr Thr Pro Arg Thr Gly His Arg Ile Arg Lys Leu Asp Gln Ile Gln	
141 146 151 156	
agc ggg ggc aat tac gtg gct gga ggc cag gaa gcc ttc aag aaa ctc	591
Ser Gly Gly Asn Tyr Val Ala Gly Gly Gln Glu Ala Phe Lys Lys Leu	
157 162 167 172	
aat tac ttg gac ata gga gaa atc aag aaa aga cca atg gaa gtt gtt	639
Asn Tyr Leu Asp Ile Gly Glu Ile Lys Lys Arg Pro Met Glu Val Val	
173 178 183 188	
aat aca gag gta aaa cca gta atc cat agc agg atc aac gtg tca gct	687
Asn Thr Glu Val Lys Pro Val Ile His Ser Arg Ile Asn Val Ser Ala	
189 194 199 204	
cgc ttt aga aaa ccg ctt cag gag ccg tgc act atc ttc ttg att gca	735
Arg Phe Arg Lys Pro Leu Gln Glu Pro Cys Thr Ile Phe Leu Ile Ala	
205 210 215 220	
aat gga gac ctc ata aac cca gct tct cgc ctc ctt atc ccc aga aaa	783
Asn Gly Asp Leu Ile Asn Pro Ala Ser Arg Leu Leu Ile Pro Arg Lys	
221 226 231 236	
acc ttg aat cag tgg gat cat gta cta caa atg gtc aca gaa aaa atc	831
Thr Leu Asn Gln Trp Asp His Val Leu Gln Met Val Thr Glu Lys Ile	
237 242 247 252	
act ctg agg agc ggg gct gtt cac agg ctt tat act tta gaa gga aaa	879
Thr Leu Arg Ser Gly Ala Val His Arg Leu Tyr Thr Leu Glu Gly Lys	
253 258 263 268	
ctt gtt gag agt gga gca gag ttg gag aat ggg cag ttt tat gtg gct	927
Leu Val Glu Ser Gly Ala Glu Leu Glu Asn Gly Gln Phe Tyr Val Ala	
269 274 279 284	
gtt ggc aga gat aag ttt aag aaa ctg cct tac ggt gag tta ctt ttt	975
Val Gly Arg Asp Lys Phe Lys Lys Leu Pro Tyr Gly Glu Leu Leu Phe	
285 290 295 300	
gac aag tca acg atg aga agg cct ttt ggt cag aaa gct tct tca cta	1023

Asp Lys Ser Thr Met Arg Arg Pro Phe Gly Gln Lys Ala Ser Ser Leu	
301 306 311 316	
cct cct att gta gga tcc aga aag tct aaa ggg agt gga aat gat cgc	1071
Pro Pro Ile Val Gly Ser Arg Lys Ser Lys Gly Ser Gly Asn Asp Arg	
317 322 327 332	
cac tct aag tca aca gtt gga tcc agt gac aac tca tct cct cag ccc	1119
His Ser Lys Ser Thr Val Gly Ser Ser Asp Asn Ser Ser Pro Gln Pro	
333 338 343 348	
ctg aag agg aaa ggg aaa aaa gaa gac gtg aat tca gaa aaa ctg acg	1167
Leu Lys Arg Lys Gly Lys Lys Glu Asp Val Asn Ser Glu Lys Leu Thr	
349 354 359 364	
aaa ttg aaa caa aat gta aaa tta aag aat tca caa gaa acc att cca	1215
Lys Leu Lys Gln Asn Val Lys Leu Lys Asn Ser Gln Glu Thr Ile Pro	
365 370 375 380	
aat agt gat gaa ggc att ttc aaa gct gga gca gag agg tct gaa aca	1263
Asn Ser Asp Glu Gly Ile Phe Lys Ala Gly Ala Glu Arg Ser Glu Thr	
381 386 391 396	
cgg ggg gca gca gaa gtc caa gaa gat gaa gat act cag gtt gag gtt	1311
Arg Gly Ala Ala Glu Val Gln Glu Asp Glu Asp Thr Gln Val Glu Val	
397 402 407 412	
cca gtc gat cag agg cca gca gaa ata gta gac gag gaa gaa gat gga	1359
Pro Val Asp Gln Arg Pro Ala Glu Ile Val Asp Glu Glu Glu Asp Gly	
413 418 423 428	
gag aag gca aac aag gat gca gaa cag aaa gaa gac ttt tca gga atg	1407
Glu Lys Ala Asn Lys Asp Ala Glu Gln Lys Glu Asp Phe Ser Gly Met	
429 434 439 444	
aat ggt gac ctt gaa gag gaa gga ggt agg gag gct aca gat gcc cct	1455
Asn Gly Asp Leu Glu Glu Glu Gly Gly Arg Glu Ala Thr Asp Ala Pro	
445 450 455 460	
gag caa gtc gag gag att ctg gat cac agt gag cag cag gca cgc cct	1503
Glu Gln Val Glu Glu Ile Leu Asp His Ser Glu Gln Gln Ala Arg Pro	
461 466 471 476	
gct cgt gta aat gga ggc acc gat gag gag aat ggt gag gag ctg cag	1551
Ala Arg Val Asn Gly Gly Thr Asp Glu Glu Asn Gly Glu Glu Leu Gln	
477 482 487 492	
cag gtt aat aat gag ctt caa ctg gtc cta gac aag gaa aga aag tct	1599
Gln Val Asn Asn Glu Leu Gln Leu Val Leu Asp Lys Glu Arg Lys Ser	
493 498 503 508	
caa gga gct ggc agt gga caa gat gag gta ttt cta ttg ctt ttg ctt	1647
Gln Gly Ala Gly Ser Gly Gln Asp Glu Val Phe Leu Leu Leu Leu Leu	
509 514 519 524	
gct tat gtg aat gca tga atatgt gtgtgtgtac atgcgtgcat tcagagaatt	1701
Ala Tyr Val Asn Ala *	



525

530

aatcaagtgt ttaggacttg tattgaaacc acttgtgggt gagtaggaaa gatccaatac 1761  
 catttaatcc ctttacttac tagttatttc aaccatttaa caatactgcc attgacctga 1821  
 cagtttgtgt ctgccctttt gcgtcgacgc ggccgcgaat tcggatcctc gagagatctc 1881  
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 aatnnnnncc ccacg 1956

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 <212> DNA  
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<220>  
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 <222> (128) .. (1522)

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 actggcc atg cag aca gag cga ggc aac ggt ttg cag gcg gtc cag cag 169  
 Met Gln Thr Glu Arg Gly Asn Gly Leu Gln Ala Val Gln Gln  
 1 5 10  
 cac atc aaa aag aac cag ggc ctg cgg cgg gag atc cag gcg cat ggg 217  
 His Ile Lys Lys Asn Gln Gly Leu Arg Arg Glu Ile Gln Ala His Gly  
 15 20 25 30  
 ccg cgc ctg gag gag gtg ctg gag cgc gcg ggc gcg ctg gcg tcg ctg 265  
 Pro Arg Leu Glu Glu Val Leu Glu Arg Ala Gly Ala Leu Ala Ser Leu  
 31 36 41 46  
 cgc agc ccg gag gca gag gca gtg cgc cgg ggc ctg gag cag ctg cag 313  
 Arg Ser Pro Glu Ala Glu Ala Val Arg Arg Gly Leu Glu Gln Leu Gln  
 47 52 57 62  
 agc gcc tgg gcc gga ctg cgg gag gct gcc gag cga cgg cag cag gtg 361  
 Ser Ala Trp Ala Gly Leu Arg Glu Ala Ala Glu Arg Arg Gln Gln Val  
 63 68 73 78  
 ctg gac gcc gcc ttc cag gtg gag cag tac tac ttc gac gtg gct gag 409  
 Leu Asp Ala Ala Phe Gln Val Glu Gln Tyr Tyr Phe Asp Val Ala Glu  
 79 84 89 94  
 gtg gag gcg tgg ctg ggc gag cag gag ctg ctc atg atg agt gag gac 457  
 Val Glu Ala Trp Leu Gly Glu Gln Glu Leu Leu Met Met Ser Glu Asp  
 95 100 105 110



Met Gln Arg Thr Leu Arg Ala Phe Glu His Asp Leu Gln Leu Leu Val	
335 340 345 350	
tcc cag gta cgg cag ctg cag gag ggg gcg gcc cag ctg cgg acg gtg	1225
Ser Gln Val Arg Gln Leu Gln Glu Gly Ala Ala Gln Leu Arg Thr Val	
351 356 361 366	
tat gcg ggt gaa cat gcc gag gcc atc gct agc cgg gag cag gag gtg	1273
Tyr Ala Gly Glu His Ala Glu Ala Ile Ala Ser Arg Glu Gln Glu Val	
367 372 377 382	
ctg cag ggt tgg aaa gag ctg ctg tca gcc tgt gag gat gcc cgc ctg	1321
Leu Gln Gly Trp Lys Glu Leu Leu Ser Ala Cys Glu Asp Ala Arg Leu	
383 388 393 398	
cat gtc agc tcc aca gcc gac gcc ctg cgc ttc cac agc caa gtc cgc	1369
His Val Ser Ser Thr Ala Asp Ala Leu Arg Phe His Ser Gln Val Arg	
399 404 409 414	
gac ctg ctc tcc tgg atg gat ggc atc gcc agc cag att ggg gca gcc	1417
Asp Leu Leu Ser Trp Met Asp Gly Ile Ala Ser Gln Ile Gly Ala Ala	
415 420 425 430	
gac aag ccc agg tgc ccc tca tcc ctc ctc ggg ctt cct gcc tcc ccc	1465
Asp Lys Pro Arg Cys Pro Ser Ser Leu Leu Gly Leu Pro Ala Ser Pro	
431 436 441 446	
tgg tgg cct acc cca gcc acc ccc agc cca ttg aca gcc ccc ttc tca	1513
Trp Trp Pro Thr Pro Ala Thr Pro Ser Pro Leu Thr Ala Pro Phe Ser	
447 452 457 462	
atg gaa tga caacagc caatatctgt gtggcgcttc tgtgtgctag gcactgttct	1569
Met Glu *	
463	
aggtgcttcg tgtgtattca gacccctttt ttaggcctgt cattggggct cagaacaacg	1629
acagcggccg ctctagagga tccaagctta cgtacgcgtg catgcgacgt catagctctt	1689
c	1690

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actgccggag ttacaactca cggctgtgtg cagagcgcag cgtgcgtctt ccttctctgg	120

actcacagac	tg	ggg	gtg	gcc	cagaacaact	gctacatctg	g					atg	gag	aag	agg	173
												Met	Glu	Lys	Arg	
												1				
cac	cga	ggc	cca	ggc	ctt	gcc	ccg	ggc	cag	ctg	tat	aca	tac	cct	gcc	221
His	Arg	Gly	Pro	Gly	Leu	Ala	Pro	Gly	Gln	Leu	Tyr	Thr	Tyr	Pro	Ala	
5					10					15					20	
cgc	tgc	tgg	cgc	aag	aag	aga	cga	ttg	cac	cca	cct	gaa	gat	cca	aaa	269
Arg	Cys	Trp	Arg	Lys	Lys	Arg	Arg	Leu	His	Pro	Pro	Glu	Asp	Pro	Lys	
21					26					31					36	
ctg	cgg	ctg	ctg	gag	ata	aaa	cct	gaa	gtg	gag	ctt	ccc	ctg	aag	aag	317
Leu	Arg	Leu	Leu	Glu	Ile	Lys	Pro	Glu	Val	Glu	Leu	Pro	Leu	Lys	Lys	
37					42					47					52	
gat	ggg	ttc	acc	tca	gag	agc	acc	acg	ctg	gaa	gcc	ttg	ctc	cgt	ggc	365
Asp	Gly	Phe	Thr	Ser	Glu	Ser	Thr	Thr	Leu	Glu	Ala	Leu	Leu	Arg	Gly	
53					58					63					68	
gag	ggg	gtt	gag	aag	aag	gtg	gat	gcc	agg	gag	gag	gaa	agc	atc	cag	413
Glu	Gly	Val	Glu	Lys	Lys	Val	Asp	Ala	Arg	Glu	Glu	Glu	Ser	Ile	Gln	
69					74					79					84	
gaa	ata	cag	agg	gtt	ttg	gaa	aat	gat	gaa	aat	gta	gaa	gaa	ggg	aat	461
Glu	Ile	Gln	Arg	Val	Leu	Glu	Asn	Asp	Glu	Asn	Val	Glu	Glu	Gly	Asn	
85					90					95					100	
gaa	gaa	gag	gat	ttg	gaa	gag	gat	att	ccc	aag	cga	aag	aac	agg	act	509
Glu	Glu	Glu	Asp	Leu	Glu	Glu	Asp	Ile	Pro	Lys	Arg	Lys	Asn	Arg	Thr	
101					106					111					116	
aga	gga	cgg	gct	cgc	ggc	tct	gca	ggg	ggc	agg	agg	agg	cac	gac	gcc	557
Arg	Gly	Arg	Ala	Arg	Gly	Ser	Ala	Gly	Gly	Arg	Arg	Arg	His	Asp	Ala	
117					122					127					132	
gcc	tct	cag	gaa	gac	cac	gac	aaa	cct	tac	gtc	tgt	gac	atc	tgt	ggc	605
Ala	Ser	Gln	Glu	Asp	His	Asp	Lys	Pro	Tyr	Val	Cys	Asp	Ile	Cys	Gly	
133					138					143					148	
aag	cgc	tac	aag	aac	cga	ccg	ggg	ctc	agc	tac	cac	tat	gct	cac	act	653
Lys	Arg	Tyr	Lys	Asn	Arg	Pro	Gly	Leu	Ser	Tyr	His	Tyr	Ala	His	Thr	
149					154					159					164	
cac	ctg	gcc	agc	gag	gag	ggg	gat	gaa	gct	caa	gac	cag	gag	act	cgg	701
His	Leu	Ala	Ser	Glu	Glu	Gly	Asp	Glu	Ala	Gln	Asp	Gln	Glu	Thr	Arg	
165					170					175					180	
tcc	cca	ccc	aac	cac	aga	aat	gag	aac	cac	agg	ccc	cag	aaa	gga	ccg	749
Ser	Pro	Pro	Asn	His	Arg	Asn	Glu	Asn	His	Arg	Pro	Gln	Lys	Gly	Pro	
181					186					191					196	
gat	gga	aca	gtc	att												



<212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> CDS  
 <222> (247)..(1458)

<400> 71  
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 gcccaccgcg tgtacaacgt cccggaggag ccgcctctcc tgggagccga ggactcgtc 180  
 ctggccagcc aggaggcgct gcggtattac cggaggaagg tggcccgtg gaacaggcga 240  
 cacaag atg tac aga gag cag atg aac ctt acc tcc ctg gac ccc cca 288  
 Met Tyr Arg Glu Gln Met Asn Leu Thr Ser Leu Asp Pro Pro  
 1 5 10  
 ctg cag ctc cga ctc gag gcc agc tgg gtc cag ttc cac ctg ggt att 336  
 Leu Gln Leu Arg Leu Glu Ala Ser Trp Val Gln Phe His Leu Gly Ile  
 15 20 25 30  
 aac cgc cat ggg ctc tac tcc cgg tcc agc cct gtt gtc agc aaa ctt 384  
 Asn Arg His Gly Leu Tyr Ser Arg Ser Ser Pro Val Val Ser Lys Leu  
 31 36 41 46  
 ctg caa gac atg agg cac ttt ccc acc atc agt gct gat tac agt caa 432  
 Leu Gln Asp Met Arg His Phe Pro Thr Ile Ser Ala Asp Tyr Ser Gln  
 47 52 57 62  
 gat gag aaa gcc ttg ctg ggg gca tgt gac tgc acc cag att gtg aaa 480  
 Asp Glu Lys Ala Leu Leu Gly Ala Cys Asp Cys Thr Gln Ile Val Lys  
 63 68 73 78  
 ccc agt ggg gtc cac ctc aag ctg gtg ctg agg ttc tcg gat ttc ggg 528  
 Pro Ser Gly Val His Leu Lys Leu Val Leu Arg Phe Ser Asp Phe Gly  
 79 84 89 94  
 aag gcc atg ttc aaa ccc atg aga cag cag cga gat gag gag aca cca 576  
 Lys Ala Met Phe Lys Pro Met Arg Gln Gln Arg Asp Glu Glu Thr Pro  
 95 100 105 110  
 gtg gac ttc ttc tac ttc att gac ttt cag aga cac aat gct gag atc 624  
 Val Asp Phe Phe Tyr Phe Ile Asp Phe Gln Arg His Asn Ala Glu Ile  
 111 116 121 126  
 gca gct ttc cat ctg gac agg att ctg gac ttc cga cgg gtg ccg cca 672  
 Ala Ala Phe His Leu Asp Arg Ile Leu Asp Phe Arg Arg Val Pro Pro  
 127 132 137 142  
 aca gtg ggg agg ata gta aat gtc acc aag gaa atc cta gag gtc acc 720  
 Thr Val Gly Arg Ile Val Asn Val Thr Lys Glu Ile Leu Glu Val Thr  
 143 148 153 158  
 aag aat gaa atc ctg cag agt gtt ttc ttt gtc tct cca gcg agc aac 768

Lys	Asn	Glu	Ile	Leu	Gln	Ser	Val	Phe	Phe	Val	Ser	Pro	Ala	Ser	Asn	
159					164					169					174	
gtg	tgc	ttc	ttc	gcc	aag	tgt	cca	tac	atg	tgc	aag	acg	gag	tat	gct	816
Val	Cys	Phe	Phe	Ala	Lys	Cys	Pro	Tyr	Met	Cys	Lys	Thr	Glu	Tyr	Ala	
175					180					185					190	
gtc	tgt	ggc	aaa	cca	cac	ctg	ctg	gag	ggg	tcc	ctc	tct	gcc	ttc	ctg	864
Val	Cys	Gly	Lys	Pro	His	Leu	Leu	Glu	Gly	Ser	Leu	Ser	Ala	Phe	Leu	
191					196					201					206	
ccg	tcc	ctc	aac	ctg	gcc	ccc	agg	ctg	tct	gtg	ccc	aac	ccc	tgg	atc	912
Pro	Ser	Leu	Asn	Leu	Ala	Pro	Arg	Leu	Ser	Val	Pro	Asn	Pro	Trp	Ile	
207					212					217					222	
cgc	tcc	tac	aca	ctg	gca	gga	aaa	gag	gag	tgg	gag	gtc	aat	ccc	ctt	960
Arg	Ser	Tyr	Thr	Leu	Ala	Gly	Lys	Glu	Glu	Trp	Glu	Val	Asn	Pro	Leu	
223					228					233					238	
tac	tgt	gac	aca	gtg	aaa	cag	atc	tac	ccg	tac	aac	aac	agc	cag	cgg	1008
Tyr	Cys	Asp	Thr	Val	Lys	Gln	Ile	Tyr	Pro	Tyr	Asn	Asn	Ser	Gln	Arg	
239					244					249					254	
ctc	ctc	aat	gtc	atc	gac	atg	gcc	atc	ttc	gac	ttc	ttg	ata	ggg	aat	1056
Leu	Leu	Asn	Val	Ile	Asp	Met	Ala	Ile	Phe	Asp	Phe	Leu	Ile	Gly	Asn	
255					260					265					270	
atg	gac	cgg	cac	cat	tat	gag	atg	ttc	acc	aag	ttc	ggg	gat	gat	ggg	1104
Met	Asp	Arg	His	His	Tyr	Glu	Met	Phe	Thr	Lys	Phe	Gly	Asp	Asp	Gly	
271					276					281					286	
ttc	ctt	att	cac	ctt	gac	aac	gcc	aga	ggg	ttc	gga	cga	cac	tcc	cat	1152
Phe	Leu	Ile	His	Leu	Asp	Asn	Ala	Arg	Gly	Phe	Gly	Arg	His	Ser	His	
287					292					297					302	
gat	gaa	atc	tcc	atc	ctc	tcg	cct	ctc	tcc	cag	tgc	tgc	atg	ata	aaa	1200
Asp	Glu	Ile	Ser	Ile	Leu	Ser	Pro	Leu	Ser	Gln	Cys	Cys	Met	Ile	Lys	
303					308					313					318	
aag	aaa	aca	ctt	ttg	cac	ctg	cag	ctg	ctg	gcc	caa	gct	gac	tac	aga	1248
Lys	Lys	Thr	Leu	Leu	His	Leu	Gln	Leu	Leu	Ala	Gln	Ala	Asp	Tyr	Arg	
319					324					329					334	
ctc	agc	gat	gtg	atg	cga	gaa	tca	ctg	ctg	gaa	gac	cag	ctc	agc	cct	1296
Leu	Ser	Asp	Val	Met	Arg	Glu	Ser	Leu	Leu	Glu	Asp	Gln	Leu	Ser	Pro	
335					340					345					350	
gtc	ctc	act	gaa	ccc	cac	ctc	ctt	gcc	ctg	gat	cga	agg	ctc	caa	acc	1344
Val	Leu	Thr	Glu	Pro	His	Leu	Leu	Ala	Leu	Asp	Arg	Arg	Leu	Gln	Thr	
351					356					361					366	
atc	cta	agg	aca	gtg	gag	ggg	tgc	ata	gtg	gcc	cat	gga	cag	cag	agt	1392
Ile	Leu	Arg	Thr	Val	Glu	Gly	Cys	Ile	Val	Ala	His	Gly	Gln	Gln	Ser	
367					372					377					382	
gtc	ata	gtc	gac	ggc	cca	gtg	gaa	cag	tcg	gcc	cca	gac	tct	ggc	cag	1440
Val	Ile	Val	Asp	Gly	Pro	Val	Glu	Gln	Ser	Ala	Pro	Asp	Ser	Gly	Gln	

383	388	393	398	
gct aac ttg aca agc taa gggctg gcagagtcca gtttcagaaa atacgcttg				1494
Ala Asn Leu Thr Ser *				
399	404			
agccagagca gtcgactcga gtgccgaccc tgcgtcctca ctcccacctg ttactgcttg				1554
gagtcaagtc agctaggaag gaagcaggac attttctcaa acagcaagtg gggcccatgg				1614
aactgaatct ttactccttg gtgcaccgct tctgtcgtgc gttgccttgc tccgtttttc				1674
ccaaaaagca ctggcttcat caaggccacc gacgatctcc tgagtgcact gggaaatctg				1734
ggtataggtc aggcttggca gccttgatcc caggagagta ctaatggtaa caagtcaaat				1794
aaaaggacat caagtggaaa aaaaaaaaaa				1823

<210> 72  
 <211> 5824  
 <212> DNA  
 <213> Homo sapiens  
  
 <220>  
 <221> CDS  
 <222> (590) .. (5824)

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tctgtttcct catctatcaa tgaagatgat actatgaacc caataaggct gttaaaacag		180
gttttttatt acctaccacg gcgggctgta catctctgac gtacagaagg aggacgcct		240
ctccacctat cgctgcatca ccaagcacia gtatagcggg gagaccggc agagcaatgg		300
ggcacgcctc tctgtgacag accctgctga gtgatcccc accatcctgg atggcttcca		360
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	Met Val	
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att gat ccc ctt cat gtg acc ctg <sup>1</sup> aca cca aag aag ctg aag acc ggc		643
Ile Asp Pro Leu His Val Thr Leu Thr Pro Lys Lys Leu Lys Thr Gly		
3 8 13 18		





Val	Val	Phe	Glu	Asn	Gly	Thr	Leu	Lys	Leu	Thr	Asp	Val	Gln	Lys	Gly	
243					248					253					258	
atg	gat	gag	ggg	gag	tac	ctg	tgc	agt	gtc	ctc	atc	cag	ccc	cag	ctc	1411
Met	Asp	Glu	Gly	Glu	Tyr	Leu	Cys	Ser	Val	Leu	Ile	Gln	Pro	Gln	Leu	
259					264					269					274	
tcc	atc	agc	cag	agc	gtt	cac	gta	gcc	gtc	aaa	gtg	ccc	cct	ctg	atc	1459
Ser	Ile	Ser	Gln	Ser	Val	His	Val	Ala	Val	Lys	Val	Pro	Pro	Leu	Ile	
275					280					285					290	
cag	ccc	ttc	gaa	ttc	cca	ccc	gcc	tcc	atc	ggc	cag	ctg	ctc	tac	att	1507
Gln	Pro	Phe	Glu	Phe	Pro	Pro	Ala	Ser	Ile	Gly	Gln	Leu	Leu	Tyr	Ile	
291					296					301					306	
ccc	tgt	gtg	gtg	tcc	tcg	ggg	gac	atg	ccc	atc	cgt	atc	acc	tgg	agg	1555
Pro	Cys	Val	Val	Ser	Ser	Gly	Asp	Met	Pro	Ile	Arg	Ile	Thr	Trp	Arg	
307					312					317					322	
aag	gac	gga	cag	gtg	atc	atc	tca	ggc	tcg	ggc	gtg	acc	atc	gag	agc	1603
Lys	Asp	Gly	Gln	Val	Ile	Ile	Ser	Gly	Ser	Gly	Val	Thr	Ile	Glu	Ser	
323					328					333					338	
aag	gaa	ttc	atg	agc	tcc	ctg	cag	atc	tct	agc	gtc	tcc	ctc	aag	cac	1651
Lys	Glu	Phe	Met	Ser	Ser	Leu	Gln	Ile	Ser	Ser	Val	Ser	Leu	Lys	His	
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Asn	Gly	Asn	Tyr	Thr	Cys	Ile	Ala	Ser	Asn	Ala	Ala	Ala	Thr	Val	Ser	
355					360					365					370	
cgg	gag	cgc	cag	ctc	atc	gtg	cgt	gtg	ccc	cct	cga	ttt	gtg	gtg	caa	1747
Arg	Glu	Arg	Gln	Leu	Ile	Val	Arg	Val	Pro	Pro	Arg	Phe	Val	Val	Gln	
371					376					381					386	
ccc	aac	aac	cag	gat	ggc	atc	tac	ggc	aaa	gct	ggt	gtg	ctc	aac	tgc	1795
Pro	Asn	Asn	Gln	Asp	Gly	Ile	Tyr	Gly	Lys	Ala	Gly	Val	Leu	Asn	Cys	
387					392					397					402	
tcg	gtg	gac	ggc	tac	ccc	cca	ccc	aag	gtc	atg	tgg	aag	cat	gcc	aag	1843
Ser	Val	Asp	Gly	Tyr	Pro	Pro	Pro	Lys	Val	Met	Trp	Lys	His	Ala	Lys	
403					408					413					418	
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Gly	Ser	Gly	Asn	Pro	Gln	Gln	Tyr	His	Pro	Val	Pro	Leu	Thr	Gly	Arg	
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Ile	Gln	Ile	Leu	Pro	Asn	Ser	Ser	Leu	Leu	Ile	Arg	His	Val	Leu	Glu	
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Glu	Asp	Ile	Gly	Tyr	Tyr	Leu	Cys	Gln	Ala	Ser	Asn	Gly	Val	Gly	Thr	
451					456					461					466	
gac	atc	agc	aag	tcc	atg	ttc	ctc	aca	gtc	aag	atc	ccg	gcc	atg	atc	2035
Asp	Ile	Ser	Lys	Ser	Met	Phe	Leu	Thr	Val	Lys	Ile	Pro	Ala	Met	Ile	

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Thr Ser His Pro Asn Thr Thr Ile Ala Ile Lys Gly His Ala Lys Glu							
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cta aac tgc acg gca cgg ggt gag cgg ccc atc atc atc cgc tgg gag	2131						
Leu Asn Cys Thr Ala Arg Gly Glu Arg Pro Ile Ile Ile Arg Trp Glu							
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aag ggg gac aca gtc atc gac cct gac cgc gtc atg cgg tat gcc atc	2179						
Lys Gly Asp Thr Val Ile Asp Pro Asp Arg Val Met Arg Tyr Ala Ile							
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gcc acc aag gac aac ggc gac gag gtc gtc tcc aca ctg aag ctc aag	2227						
Ala Thr Lys Asp Asn Gly Asp Glu Val Val Ser Thr Leu Lys Leu Lys							
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ccc gct gac cgt ggg gac tct gtg ttc ttc agc tgc cat gcc atc aac	2275						
Pro Ala Asp Arg Gly Asp Ser Val Phe Phe Ser Cys His Ala Ile Asn							
547		552		557		562	
tcg tat ggg gag gac cgg ggc ttg atc caa ctc act gtg caa gag ccc	2323						
Ser Tyr Gly Glu Asp Arg Gly Leu Ile Gln Leu Thr Val Gln Glu Pro							
563		568		573		578	
ccc gac ccc cca gag ctg gag atc cgg gag gtg aag gcc cgg agc atg	2371						
Pro Asp Pro Pro Glu Leu Glu Ile Arg Glu Val Lys Ala Arg Ser Met							
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aac ctg cgc tgg acc cag cga ttc gac ggg aac agc atc atc acg ggc	2419						
Asn Leu Arg Trp Thr Gln Arg Phe Asp Gly Asn Ser Ile Ile Thr Gly							
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Phe Asp Ile Glu Tyr Lys Asn Lys Ser Asp Ser Trp Asp Phe Lys Gln							
611		616		621		626	
tcc aca cgc aac atc tcc ccc acc atc aac cag gcc aac att gtg gac	2515						
Ser Thr Arg Asn Ile Ser Pro Thr Ile Asn Gln Ala Asn Ile Val Asp							
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ttg cac ccg gca tct gtg tac agc atc cgc atg tac tct ttc aac aag	2563						
Leu His Pro Ala Ser Val Tyr Ser Ile Arg Met Tyr Ser Phe Asn Lys							
643		648		653		658	
att ggc cgc agt gaa cca agc aag gag ctc acc atc agc act gag gag	2611						
Ile Gly Arg Ser Glu Pro Ser Lys Glu Leu Thr Ile Ser Thr Glu Glu							
659		664		669		674	
gcc gct ccc gat ggg ccc ccc atg gat gtt acc ttg cag cca gtg acc	2659						
Ala Ala Pro Asp Gly Pro Pro Met Asp Val Thr Leu Gln Pro Val Thr							
675		680		685		690	
tca cag agc atc cag gtg acc tgg aag gca ccc aag aag gag ctg cag	2707						
Ser Gln Ser Ile Gln Val Thr Trp Lys Ala Pro Lys Lys Glu Leu Gln							
691		696		701		706	

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Asn Gly Val Ile Arg Gly Tyr Gln Ile Gly Tyr Arg Glu Asn Ser Pro	
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ggc agc aac ggg cag tac agc atc gtg gag atg aag gcc acg ggg gac	2803
Gly Ser Asn Gly Gln Tyr Ser Ile Val Glu Met Lys Ala Thr Gly Asp	
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agc gag gtc tac acc ctg gac aac ctc aag aag ttc gcc cag tat ggg	2851
Ser Glu Val Tyr Thr Leu Asp Asn Leu Lys Lys Phe Ala Gln Tyr Gly	
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Val Val Val Gln Ala Phe Asn Arg Ala Gly Thr Gly Pro Ser Ser Ser	
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gag atc aat gcc acc act ctg gag gat gtg ccc agc cag ccc cct gag	2947
Glu Ile Asn Ala Thr Thr Leu Glu Asp Val Pro Ser Gln Pro Pro Glu	
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Asn Val Arg Ala Leu Ser Ile Thr Ser Asp Val Ala Val Ile Ser Trp	
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Ser Glu Pro Pro Arg Ser Thr Leu Asn Gly Val Leu Lys Gly Tyr Arg	
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gtc atc ttc tgg tcc ctc tat gtt gat ggg gag tgg ggc gag atg cag	3091
Val Ile Phe Trp Ser Leu Tyr Val Asp Gly Glu Trp Gly Glu Met Gln	
819 824 829 834	
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Asn Ile Thr Thr Thr Arg Glu Arg Val Glu Leu Arg Gly Met Glu Lys	
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Phe Thr Asn Tyr Ser Val Gln Val Leu Ala Tyr Thr Gln Ala Gly Asp	
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Gly Val Arg Ser Ser Val Leu Tyr Ile Gln Thr Lys Glu Asp Val Pro	
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Gly Pro Pro Ala Gly Ile Lys Ala Val Pro Ser Ser Ala Ser Ser Val	
883 888 893 898	
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Val Val Ser Trp Leu Pro Pro Thr Lys Pro Asn Gly Val Ile Arg Lys	
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Tyr Thr Ile Phe Cys Ser Ser Pro Gly Ser Gly Gln Pro Ala Pro Ser	
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Glu Tyr Glu Thr Ser Pro Glu Gln Leu Phe Tyr Arg Ile Ala His Leu	
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Gly Arg Gly Asn Ser Ser Glu Lys Val Thr Ile Glu Pro Ala Gly Lys	
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Met Lys Asp Val Arg Leu Pro Cys Asn Ser Val Gly Asp Pro Ala Pro	
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Ala Val Lys Trp Thr Lys Asp Ser Glu Asp Ser Ala Ile Pro Val Ser	
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Met Asp Gly His Arg Leu Ile His Thr Asn Gly Thr Leu Leu Leu Arg	
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act ggt ggc ttt gac acc atc atc gtc aac ctt ctg gtg caa gtt ccc	3811
Thr Gly Gly Phe Asp Thr Ile Ile Val Asn Leu Leu Val Gln Val Pro	
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cgc gac cag ccc cgc ctc act gtc tcc aaa acc tca gct tcg tcc atc	3859
Pro Asp Gln Pro Arg Leu Thr Val Ser Lys Thr Ser Ala Ser Ser Ile	
1075 1080 1085 1090	
acc ctg acc tgg att cca ggt gac aat ggg ggc agc tcc atc cga ggc	3907
Thr Leu Thr Trp Ile Pro Gly Asp Asn Gly Gly Ser Ser Ile Arg Gly	
1091 1096 1101 1106	
ttc gtg cta cag tac tcg gtg gac aac agc gag gag tgg aag gat gtg	3955
Phe Val Leu Gln Tyr Ser Val Asp Asn Ser Glu Glu Trp Lys Asp Val	
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Phe Ile Ser Ser Ser Glu Arg Ser Phe Lys Leu Asp Ser Leu Lys Cys	
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Gly Thr Trp Tyr Lys Val Lys Leu Ala Ala Lys Asn Ser Val Gly Ser	
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Gly Arg Ile Ser Glu Ile Ile Glu Ala Lys Thr His Gly Arg Glu Pro	
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Ser Phe Ser Lys Asp Gln His Leu Phe Thr His Ile Asn Ser Thr His	
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gcc atc gtt ctg gag tac cgg ccc aag ggg acc tgg gcc tgg cag ggc	4243
Ala Ile Val Leu Glu Tyr Arg Pro Lys Gly Thr Trp Ala Trp Gln Gly	
1203 1208 1213 1218	
ctc cgg gcc aac agc tcc ggg gag gtg ttt ctg acg gaa ctg cga gag	4291
Leu Arg Ala Asn Ser Ser Gly Glu Val Phe Leu Thr Glu Leu Arg Glu	
1219 1224 1229 1234	
gcc acg tgg tac gag ctg cgc atg agg gct tgc aac agt gcg ggc tgc	4339
Ala Thr Trp Tyr Glu Leu Arg Met Arg Ala Cys Asn Ser Ala Gly Cys	
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Gly Asn Glu Thr Ala Gln Phe Ala Thr Leu Asp Tyr Asp Gly Ser Thr	
1251 1256 1261 1266	
att cca ccc atc aag tct gct caa ggt gaa ggg gat gat gtg aag aag	4435
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Ile Lys Gln Leu Gly Asp Asp Lys Ala Thr Ile Pro Val Thr Asp Ala	
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Glu Phe Ser Gln Ala Val Asn Pro Gln Ser Phe Cys Thr Gly Val Ser	

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Leu His His Pro Thr Leu Ile Gln Ser Thr Gly Pro Leu Ile Asp Met				
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Ser Asp Ile Arg Pro Gly Thr Asn Pro Val Ser Arg Lys Asn Val Lys				
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tca gcc cac agc acc cgg aac cgg tac tca agc cag tgg acc ctg acc				4915
Ser Ala His Ser Thr Arg Asn Arg Tyr Ser Ser Gln Trp Thr Leu Thr				
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Lys Cys Gln Ala Ser Thr Pro Ala Arg Thr Leu Thr Ser Asp Trp Arg				
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Thr Val Gly Ser Gln His Gly Val Thr Val Thr Glu Ser Asp Ser Tyr				
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Ser Ala Ser Leu Ser Gln Asp Thr Asp Lys Gly Arg Asn Ser Met Val				
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Ser Thr Glu Ser Ala Ser Ser Thr Tyr Glu Glu Leu Ala Arg Ala Tyr				
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Glu His Ala Lys Leu Glu Glu Gln Leu Gln His Ala Lys Phe Glu Ile				
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Thr Glu Cys Phe Ile Ser Asp Ser Ser Ser Asp Gln Met Thr Thr Gly				
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Thr Asn Glu Asn Ala Asp Ser Met Thr Ser Met Ser Thr Pro Ser Glu				
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Pro Gly Ile Cys Arg Phe Thr Ala Ser Pro Pro Lys Pro Gln Asp Ala				
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Asp Arg Gly Lys Asn Val Ala Val Pro Ile Pro His Arg Ala Asn Lys				
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Ser Asp Tyr Cys Asn Leu Pro Leu Tyr Ala Lys Ser Glu Ala Phe Phe				
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Arg Lys Ala Asp Gly Arg Glu Pro Cys Pro Val Val Pro Pro Arg Glu				
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Ala Ser Ile Arg Asn Leu Ala Arg Thr Tyr His Thr Gln Ala Arg His	
1619                      1624                      1629                      1634	
ctg acc ctg gac cct gcc agc aag tcc ttg ggc ctt ccc cac cca ggg	5539
Leu Thr Leu Asp Pro Ala Ser Lys Ser Leu Gly Leu Pro His Pro Gly	
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gcc ccc gct gcc gcc tcc aca gcc acc tta cct cag agg act ctg gcc	5587
Ala Pro Ala Ala Ala Ser Thr Ala Thr Leu Pro Gln Arg Thr Leu Ala	
1651                      1656                      1661                      1666	
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Met Pro Ala Pro Pro Ala Gly Thr Ala Pro Pro Ala Pro Gly Pro Thr	
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Pro Ala Glu Pro Pro Thr Ala Pro Ser Ala Ala Pro Pro Ala Pro Ser	
1683                      1688                      1693                      1698	
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Thr Glu Pro Pro Arg Ala Gly Gly Pro His Thr Lys Met Gly Gly Ser	
1699                      1704                      1709                      1714	
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Arg Asp Ser Leu Leu Glu Met Ser Thr Ser Gly Val Gly Arg Ser Gln	
1715                      1720                      1725                      1730	
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Cys Ile Val Trp Gly Val Ala Phe Leu Ser Asp Gly Thr Ile Ile Ser		
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Val Asp Ser Ala Gly Lys Val Gln Phe Trp Asp Ser Ala Thr Gly Thr		
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Leu Val Lys Ser His Leu Ile Ala Asn Ala Asp Val Gln Ser Ile Ala		
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Val Ala Asp Phe Phe Pro Gly His Glu Ser Arg Ala Thr Glu Ala Leu		
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Cys Trp Ala Glu Gly Gln Arg Leu Phe Ser Ala Gly Leu Asn Gly Glu		
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Ile Met Glu Tyr Asp Leu Gln Ala Leu Asn Ile Lys Tyr Ala Met Asp		
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111 116 121 126		
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Gln Leu Leu Val Gly Cys Glu Asp Gly Ser Val Lys Leu Phe Gln Ile		
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Thr Pro Asp Lys Ile Gln Phe Glu Arg Asn Phe Asp Arg Gln Lys Ser		
143 148 153 158		
cgc atc ctg agt ctc agc tgg cat ccc tct ggt acc cac att gca gct	707	
Arg Ile Leu Ser Leu Ser Trp His Pro Ser Gly Thr His Ile Ala Ala		
159 164 169 174		
ggt tcc ata gac tac att agt gtg ttt gat gtc aaa tca ggc agc gct	755	
Gly Ser Ile Asp Tyr Ile Ser Val Phe Asp Val Lys Ser Gly Ser Ala		
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Val His Lys Met Ile Val Asp Arg Gln Tyr Met Gly Val Ser Lys Arg		
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Lys Cys Ile Val Trp Gly Val Ala Phe Leu Ser Asp Gly Thr Ile Ile		
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Ser Val Asp Ser Ala Gly Lys Val Gln Phe Trp Asp Ser Ala Thr Gly	
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acg ctt gtg aag agc cat ctc atc gct aat gct gac gtg cag tcc att	947
Thr Leu Val Lys Ser His Leu Ile Ala Asn Ala Asp Val Gln Ser Ile	
239 244 249 254	
gct gta gct gac caa gaa gac agt ttc gtg gtg ggc aca gcc gag gga	995
Ala Val Ala Asp Gln Glu Asp Ser Phe Val Val Gly Thr Ala Glu Gly	
255 260 265 270	
aca gtc ttc cat ttt cag ctg gtc cct gtg aca tct aac agc agt gag	1043
Thr Val Phe His Phe Gln Leu Val Pro Val Thr Ser Asn Ser Ser Glu	
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Arg Thr Val Ala His Ser Pro Thr Ala Leu Ile Ser Gly Gly Thr Asp	
303 308 313 318	
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Thr His Leu Val Phe Arg Pro Leu Met Glu Lys Val Glu Val Lys Asn	
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Tyr Asp Ala Ala Leu Arg Lys Ile Thr Phe His His Arg Cys Leu Ile	
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Ser Cys Ser Lys Lys Arg Gln Leu Leu Leu Phe Gln Phe Ala His His	
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Leu Glu Leu Trp Arg Leu Gly Ser Thr Val Ala Thr Gly Lys Asn Gly	
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gat act ctt cca ctc tct aaa aat gca gat cat tta ctg cac cta aag	1379
Asp Thr Leu Pro Leu Ser Lys Asn Ala Asp His Leu Leu His Leu Lys	
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Thr Lys Gly Pro Glu Asn Ile Ile Cys Ser Cys Ile Ser Pro Cys Gly	
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Ser Trp Ile Ala Tyr Ser Thr Val Ser Arg Phe Phe Leu Tyr Arg Leu	
415 420 425 430	
aat tat gaa cat gac aac ata agc ctc aaa agg gtt tcc aaa atg cca	1523
Asn Tyr Glu His Asp Asn Ile Ser Leu Lys Arg Val Ser Lys Met Pro	
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cta gct gca tca ggt acc agt gct gga gtc cat gtc tac aac gta aaa		1763
Leu Ala Ala Ser Gly Thr Ser Ala Gly Val His Val Tyr Asn Val Lys		
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cag cta aag ctt cac tgc acg gtg cct gct tac aat ttc cca gtg act		1811
Gln Leu Lys Leu His Cys Thr Val Pro Ala Tyr Asn Phe Pro Val Thr		
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gct atg gct att gcc ccc aat acc aac aac ctt gtc atc gct cat tcg		1859
Ala Met Ala Ile Ala Pro Asn Thr Asn Asn Leu Val Ile Ala His Ser		
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Asp Gln Gln Val Phe Glu Tyr Ser Ile Pro Asp Lys Gln Tyr Thr Asp		
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tgg agc cgg act gtc cag aag cag ggc ttt cac cac ctt tgg ctc caa		1955
Trp Ser Arg Thr Val Gln Lys Gln Gly Phe His His Leu Trp Leu Gln		
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agg gat act cct atc aca cac atc agt ttt cat ccc aag aga ccg atg		2003
Arg Asp Thr Pro Ile Thr His Ile Ser Phe His Pro Lys Arg Pro Met		
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cac atc ctt ctc cat gat gcc tac atg ttc tgc atc att gac aag tca		2051
His Ile Leu Leu His Asp Ala Tyr Met Phe Cys Ile Ile Asp Lys Ser		
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Leu Pro Leu Pro Asn Asp Lys Thr Leu Leu Tyr Asn Pro Phe Pro Pro		
623	628 633	638
acg aat gac atc att gct cag ctc cca cca ccc att aaa aag aag aaa		2147
Thr Asn Asp Ile Ile Ala Gln Leu Pro Pro Pro Ile Lys Lys Lys Lys		
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 Met Ser Gln Leu Arg Leu Leu Pro  
 1 5  
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 Ser Arg Leu Gly Val Gln Ala Ala Arg Leu Leu Ala Ala His Asp Val  
 9 14 19 24  
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 Pro Val Phe Gly Trp Arg Ser Arg Ser Ser Gly Pro Pro Ala Thr Phe  
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 Pro Ser Ser Lys Gly Gly Gly Ser Ser Tyr Met Glu Glu Met Tyr  
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 Phe Ala Trp Leu Glu Asn Pro Gln Ser Val His Lys Ser Trp Asp Ser  
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 Arg Pro Pro Ser Val Val His Glu Ser Arg Ser Ala Val Ser Ser Arg  
 89 94 99 104  
 acc aag acc agc aaa ttg gtg gag gac cac ctg gct gtg cag tcc ctg 449  
 Thr Lys Thr Ser Lys Leu Val Glu Asp His Leu Ala Val Gln Ser Leu  
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 Ile Arg Ala Tyr Gln Ile Arg Gly His His Val Ala Gln Leu Asp Pro  
 121 126 131 136  
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 Leu Gly Ile Leu Asp Ala Asp Leu Asp Ser Phe Val Pro Ser Asp Leu  
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 Ile Thr Thr Ile Asp Lys Leu Ala Phe Tyr Asp Leu Gln Glu Ala Asp

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169	174	179	184	
gaa aac acc ctt tct ctg cgg gag atc att cgg cgc ctg gag aac acc				689
Glu Asn Thr Leu Ser Leu Arg Glu Ile Ile Arg Arg Leu Glu Asn Thr				
185	190	195	200	
tac tgc cag cac att ggc ctg gag ttc atg ttc atc aac gat gtg gag				737
Tyr Cys Gln His Ile Gly Leu Glu Phe Met Phe Ile Asn Asp Val Glu				
201	206	211	216	
cag tgc cag tgg atc cgg cag aag ttt gag acc cct ggt gtg atg cag				785
Gln Cys Gln Trp Ile Arg Gln Lys Phe Glu Thr Pro Gly Val Met Gln				
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Phe Ser Ser Glu Glu Lys Arg Thr Leu Leu Ala Arg Leu Val Arg Ser				
233	238	243	248	
atg agg ttt gaa gac ttc ctg gcc cgg aaa tgg tcc tca gag aag cgg				881
Met Arg Phe Glu Asp Phe Leu Ala Arg Lys Trp Ser Ser Glu Lys Arg				
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Phe Gly Leu Glu Gly Cys Glu Val Met Ile Pro Ala Leu Lys Thr Ile				
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Ile Asp Lys Ser Ser Glu Met Gly Ile Glu Asn Val Ile Leu Gly Met				
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Pro His Arg Gly Arg Leu Asn Val Leu Ala Asn Val Ile Arg Lys Asp				
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Leu Glu Gln Ile Phe Cys Arg Phe Asp Pro Lys Leu Glu Ala Ala Asp				
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Glu Gly Ser Gly Asp Val Lys Tyr His Leu Gly Met Tyr His Glu Arg				
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Pro Ser His Leu Glu Ala Val Asp Pro Val Val Gln Gly Lys Thr Lys				
361	366	371	376	
gca gag cag ttc tac cgt gga gat gcc cag ggc aag aag gtc atg tcc				1265
Ala Glu Gln Phe Tyr Arg Gly Asp Ala Gln Gly Lys Lys Val Met Ser				
377	382	387	392	

atc ctg gtt cat ggg gac gcc gcc ttt gct ggc cag ggc gtg gta tat	1313
Ile Leu Val His Gly Asp Ala Ala Phe Ala Gly Gln Gly Val Val Tyr	
393 398 403 408	
gag acc ttc cac ctg agc gac ctg ccc tcc tac acg acc aat ggt acc	1361
Glu Thr Phe His Leu Ser Asp Leu Pro Ser Tyr Thr Thr Asn Gly Thr	
409 414 419 424	
gtg cac gtc gtc gtc aac aac cag att gga ttc acc aca gac ccc cga	1409
Val His Val Val Val Asn Asn Gln Ile Gly Phe Thr Thr Asp Pro Arg	
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atg gcc cgc tcc tca cca tac ccg acc gac gtg gcc cgg gtg gtc aat	1457
Met Ala Arg Ser Ser Pro Tyr Pro Thr Asp Val Ala Arg Val Val Asn	
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Ala Pro Ile Phe His Val Asn Ala Asp Asp Pro Glu Ala Val Ile Tyr	
457 462 467 472	
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Val Cys Ser Val Ala Ala Glu Trp Arg Asn Thr Phe Asn Lys Asp Val	
473 478 483 488	
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Val Val Asp Leu Val Cys Tyr Arg Arg Arg Gly His Asn Glu Met Asp	
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Glu Pro Met Phe Thr Gln Pro Leu Met Tyr Lys Gln Ile His Arg Gln	
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Val Pro Val Leu Lys Lys Tyr Ala Asp Lys Leu Ile Ala Glu Gly Thr	
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Val Thr Leu Gln Glu Phe Glu Glu Glu Ile Ala Lys Tyr Asp Arg Ile	
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Cys Glu Glu Ala Tyr Gly Arg Ser Lys Asp Lys Lys Ile Leu His Ile	
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Lys His Trp Leu Asp Ser Pro Trp Pro Gly Phe Phe Asn Val Asp Gly	
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gag ccc aag agc atg aca tgc cca gcc acg ggg atc cct gag gac atg	1889
Glu Pro Lys Ser Met Thr Cys Pro Ala Thr Gly Ile Pro Glu Asp Met	
585 590 595 600	
ctc acc cac atc ggc agt gtg gcc agc tct gtg ccc ctg gag gac ttt	1937
Leu Thr His Ile Gly Ser Val Ala Ser Ser Val Pro Leu Glu Asp Phe	
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Val Glu Arg Gly Thr Phe Ser His Arg His His Val Leu His Asp Gln	
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Glu Val Asp Arg Arg Thr Cys Val Pro Met Asn His Leu Trp Pro Asp	
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His Ser Ser Ala Arg Pro Glu Arg Phe Leu Gln Met Ser Asn Asp Asp	
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Ala Glu Leu Ala Trp Cys Gln Glu Glu His Lys Asn Met Gly Tyr Tyr	
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 Ser Glu Val Gln Ala Leu Arg Val Arg Leu Glu Ile Leu Glu Glu Leu  
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Gln Gly Arg Cys Val Arg Gly Arg Cys Val Cys Phe Pro Gly Tyr Thr				
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Cys Glu Asn Gly Arg Cys Val Cys Asn Pro Gly Tyr Thr Gly Glu Asp				
289	294	299	304	
tgt ggg gtg agg agc tgc cct cgg ggc tgc agc cag cgg gga cgc tgc				960
Cys Gly Val Arg Ser Cys Pro Arg Gly Cys Ser Gln Arg Gly Arg Cys				
305	310	315	320	
aag gac ggg cgc tgc gtg tgt gac ccc ggc tac act ggc gag gac tgt				1008
Lys Asp Gly Arg Cys Val Cys Asp Pro Gly Tyr Thr Gly Glu Asp Cys				
321	326	331	336	
ggt acg cgg agc tgc ccc tgg gac tgt ggc gag ggc ggg cgc tgc gtg				1056
Gly Thr Arg Ser Cys Pro Trp Asp Cys Gly Glu Gly Gly Arg Cys Val				
337	342	347	352	
gac ggc cgc tgc gtg tgc tgg ccc ggg tac aca ggc gag gac tgc agc				1104
Asp Gly Arg Cys Val Cys Trp Pro Gly Tyr Thr Gly Glu Asp Cys Ser				
353	358	363	368	
acg cgg aca tgt ccg agg gac tgc cgg ggc cgc ggg cgc tgc gag gac				1152
Thr Arg Thr Cys Pro Arg Asp Cys Arg Gly Arg Gly Arg Cys Glu Asp				
369	374	379	384	

ggc gaa tgc att tgc gac acg ggc tac agc ggg gac gac tgc ggc gtg	1200
Gly Glu Cys Ile Cys Asp Thr Gly Tyr Ser Gly Asp Asp Cys Gly Val	
385 390 395 400	
cgc agc tgc cct ggc gac tgc aac caa agg ggc cgc tgc gag gac ggc	1248
Arg Ser Cys Pro Gly Asp Cys Asn Gln Arg Gly Arg Cys Glu Asp Gly	
401 406 411 416	
cgc tgc gtg tgc tgg ccg ggg tac act gga acc gat tgc ggc tcg cgc	1296
Arg Cys Val Cys Trp Pro Gly Tyr Thr Gly Thr Asp Cys Gly Ser Arg	
417 422 427 432	
gcc tgc cca cgc gac tgt aga ggt cgc ggg cgc tgc gag aac ggc gtg	1344
Ala Cys Pro Arg Asp Cys Arg Gly Arg Gly Arg Cys Glu Asn Gly Val	
433 438 443 448	
tgt gtt tgc aat gcg ggc tac agc ggc gag gac tgc ggt gtg cgc agc	1392
Cys Val Cys Asn Ala Gly Tyr Ser Gly Glu Asp Cys Gly Val Arg Ser	
449 454 459 464	
tgt cct ggg gac tgt cgt ggc cgg ggc cgc tgt gag agt ggc cgc tgc	1440
Cys Pro Gly Asp Cys Arg Gly Arg Gly Arg Cys Glu Ser Gly Arg Cys	
465 470 475 480	
atg tgt tgg ccg ggg tac aca ggc cgg gac tgc ggc acg cgc gcc tgt	1488
Met Cys Trp Pro Gly Tyr Thr Gly Arg Asp Cys Gly Thr Arg Ala Cys	
481 486 491 496	
cct ggc gac tgt cgc ggg cgc ggg cgc tgc gtg gat ggc cgc tgc gtg	1536
Pro Gly Asp Cys Arg Gly Arg Gly Arg Cys Val Asp Gly Arg Cys Val	
497 502 507 512	
tgc aac ccg ggc ttc acc ggt gag gac tgt ggg agc cgt cgc tgt ccc	1584
Cys Asn Pro Gly Phe Thr Gly Glu Asp Cys Gly Ser Arg Arg Cys Pro	
513 518 523 528	
ggg gac tgc cgt ggg cac ggc ctt tgc gag gat ggc gtg tgc gtg tgt	1632
Gly Asp Cys Arg Gly His Gly Leu Cys Glu Asp Gly Val Cys Val Cys	
529 534 539 544	
gac gca ggc tac tca ggg gaa gac tgc agc acg cgc agc tgc ccc ggg	1680
Asp Ala Gly Tyr Ser Gly Glu Asp Cys Ser Thr Arg Ser Cys Pro Gly	
545 550 555 560	
ggc tgc cga ggc cgc ggc cag tgc cta gat ggg cgg tgt gtg tgc gag	1728
Gly Cys Arg Gly Arg Gly Gln Cys Leu Asp Gly Arg Cys Val Cys Glu	
561 566 571 576	
gac ggc tac tct ggc gag gat tgc ggt gtg agg cag tgc ccg aat gac	1776
Asp Gly Tyr Ser Gly Glu Asp Cys Gly Val Arg Gln Cys Pro Asn Asp	
577 582 587 592	
tgc agc cag cac ggc gtg tgc cag gac ggt gtg tgc atc tgt tgg gaa	1824
Cys Ser Gln His Gly Val Cys Gln Asp Gly Val Cys Ile Cys Trp Glu	
593 598 603 608	

ggc tac gtg agt gag gac tgc agc atc cgc acc tgc ccc tcc aac tgc	1872
Gly Tyr Val Ser Glu Asp Cys Ser Ile Arg Thr Cys Pro Ser Asn Cys	
609 614 619 624	
cac ggg agg ggc cgc tgt gag gaa ggg cgc tgc ctg tgc gac cca ggc	1920
His Gly Arg Gly Arg Cys Glu Glu Gly Arg Cys Leu Cys Asp Pro Gly	
625 630 635 640	
tac acc ggc cct acc tgt gcc acc cgc atg tgc ccg gct gac tgc cgg	1968
Tyr Thr Gly Pro Thr Cys Ala Thr Arg Met Cys Pro Ala Asp Cys Arg	
641 646 651 656	
gga cgt ggg cgg tgt gtg caa gga gtg tgc ctg tgc cac gtg ggc tat	2016
Gly Arg Gly Arg Cys Val Gln Gly Val Cys Leu Cys His Val Gly Tyr	
657 662 667 672	
ggc ggt gag gac tgc ggg cag gaa gag cct cca gcc agc gcc tgc cct	2064
Gly Gly Glu Asp Cys Gly Gln Glu Glu Pro Pro Ala Ser Ala Cys Pro	
673 678 683 688	
gga ggc tgc ggg ccc cgg gaa ctg tgc cgg gca ggc cag tgt gtg tgt	2112
Gly Gly Cys Gly Pro Arg Glu Leu Cys Arg Ala Gly Gln Cys Val Cys	
689 694 699 704	
gta gag ggc ttc cga ggc cct gac tgt gcc atc cag aca tgc cca ggg	2160
Val Glu Gly Phe Arg Gly Pro Asp Cys Ala Ile Gln Thr Cys Pro Gly	
705 710 715 720	
gac tgc cgt ggc cga gga gag tgt cac gat ggc agc tgt gtc tgc aaa	2208
Asp Cys Arg Gly Arg Gly Glu Cys His Asp Gly Ser Cys Val Cys Lys	
721 726 731 736	
gat ggg tat gct ggc gaa gac tgc gga gaa gag gtg cca acc att gag	2256
Asp Gly Tyr Ala Gly Glu Asp Cys Gly Glu Glu Val Pro Thr Ile Glu	
737 742 747 752	
ggc atg agg atg cat ctc ttg gag gag aca aca gtt cgg aca gag tgg	2304
Gly Met Arg Met His Leu Leu Glu Glu Thr Thr Val Arg Thr Glu Trp	
753 758 763 768	
acc ccg gct cct ggc ccc gtg gat gcc tat gaa att cag ttc atc ccc	2352
Thr Pro Ala Pro Gly Pro Val Asp Ala Tyr Glu Ile Gln Phe Ile Pro	
769 774 779 784	
acg aca gag ggg gcg agc ccc cca ttc aca gca cgg gtt cca agc tct	2400
Thr Thr Glu Gly Ala Ser Pro Pro Phe Thr Ala Arg Val Pro Ser Ser	
785 790 795 800	
gcc tca gcc tat gac cag aga gga ctg gcc cct gga cag gag tac cag	2448
Ala Ser Ala Tyr Asp Gln Arg Gly Leu Ala Pro Gly Gln Glu Tyr Gln	
801 806 811 816	
gtc act gtc cga gcc ctt cga ggg acc agc tgg ggc ctt cct gcc tcc	2496
Val Thr Val Arg Ala Leu Arg Gly Thr Ser Trp Gly Leu Pro Ala Ser	
817 822 827 832	
aag acc atc acc acc atg atc gat ggg ccc cag gac ctc cga gtg gtg	2544

Lys	Thr	Ile	Thr	Thr	Met	Ile	Asp	Gly	Pro	Gln	Asp	Leu	Arg	Val	Val		
833					838					843					848		
gct	gtg	aca	ccg	aca	aca	ctg	gag	ctt	ggc	tgg	ctg	cgt	ccc	cag	gct	2592	
Ala	Val	Thr	Pro	Thr	Thr	Leu	Glu	Leu	Gly	Trp	Leu	Arg	Pro	Gln	Ala		
849					854					859					864		
gag	gtg	gac	cga	ttt	gtg	gtg	tcc	tac	gtc	agt	gcc	ggc	aac	cag	agg	2640	
Glu	Val	Asp	Arg	Phe	Val	Val	Ser	Tyr	Val	Ser	Ala	Gly	Asn	Gln	Arg		
865					870					875					880		
gtg	agg	ctg	gaa	gtg	ccc	cct	gaa	gca	gac	ggg	acg	ctg	ctg	act	gac	2688	
Val	Arg	Leu	Glu	Val	Pro	Pro	Glu	Ala	Asp	Gly	Thr	Leu	Leu	Thr	Asp		
881					886					891					896		
ctg	atg	cca	ggc	gta	gaa	tat	gtg	gtg	act	gtc	aca	gcg	gag	cgg	ggc	2736	
Leu	Met	Pro	Gly	Val	Glu	Tyr	Val	Val	Thr	Val	Thr	Ala	Glu	Arg	Gly		
897					902					907					912		
cgg	gca	gtc	agc	tac	cca	gct	tct	gtc	agg	gcc	aac	aca	ggg	cac	caa	2784	
Arg	Ala	Val	Ser	Tyr	Pro	Ala	Ser	Val	Arg	Ala	Asn	Thr	Gly	His	Gln		
913					918					923					928		
cag	tgg	tgg	gct	tgg	agg	gga	atg	ggg	ggg	ctg	cgg	gac	act	gac	cga	2832	
Gln	Trp	Trp	Ala	Trp	Arg	Gly	Met	Gly	Gly	Leu	Arg	Asp	Thr	Asp	Arg		
929					934					939					944		
ttt	ccc	tcc	gtt	ctc	ttt	cca	gca	cca	ggc	cac	tac	agt	tac	ccg	gag	2880	
Phe	Pro	Ser	Val	Leu	Phe	Pro	Ala	Pro	Gly	His	Tyr	Ser	Tyr	Pro	Glu		
945					950					955					960		
gtg	cgc	ccc	cca	gcc	ccg	ccc	ccc	aag	tcc	cgg	ccc	cgg	cca	gcc	cca	2928	
Val	Arg	Pro	Pro	Ala	Pro	Pro	Pro	Lys	Ser	Arg	Pro	Arg	Pro	Ala	Pro		
961					966					971					976		
gcc	ccg	cgg	ccc	cca	cgg	ccc	cct	tgg	ccc	tcg	agg	cca	gca	gag	gaa	2976	
Ala	Pro	Arg	Pro	Pro	Arg	Pro	Pro	Trp	Pro	Ser	Arg	Pro	Ala	Glu	Glu		
977					982					987					992		
agg	gag	gag	gag	tcc	ccg	ccc	agg	cca	agc	ctg	tcc	cag	ccc	cca	cgg	3024	
Arg	Glu	Glu	Glu	Ser	Pro	Pro	Arg	Pro	Ser	Leu	Ser	Gln	Pro	Pro	Arg		
993					998					1003					1008		
cgg	cct	tgg	ggc	aac	ctg	acg	gcc	gag	ctg	agc	cgt	ttc	cgc	ggc	acg	3072	
Arg	Pro	Trp	Gly	Asn	Leu	Thr	Ala	Glu	Leu	Ser	Arg	Phe	Arg	Gly	Thr		
1009					1014					1019					1024		
gtg	cag	gac	ctg	gag	cgc	cac	ctg	cgg	gct	cac	ggc	tac	cca	ctg	cgg	3120	
Val	Gln	Asp	Leu	Glu	Arg	His	Leu	Arg	Ala	His	Gly	Tyr	Pro	Leu	Arg		
1025					1030					1035					1040		
gcc	aac	cag	act	tac	acg	tcg	gtg	gcg	cgc	cac	atc	cat	gaa	tac	ttg	3168	
Ala	Asn	Gln	Thr	Tyr	Thr	Ser	Val	Ala	Arg	His	Ile	His	Glu	Tyr	Leu		
1041					1046					1051					1056		
cag	cgg	cgt	ctg	ttg	gcc	gcc	gcc	cca	gcc	ggc	tcc	ccc	gca	ccc	ccg	3216	
Gln	Arg	Arg	Leu	Leu	Ala	Ala	Ala	Pro	Ala	Gly	Ser	Pro	Ala	Pro	Pro		

1057	1062	1067	1072	
ccc cgc cac ccc cgc ccc acc gcc agc cct gat ccc ggc acc agg aaa				3264
Pro Arg His Pro Arg Pro Thr Ala Ser Pro Asp Pro Gly Thr Arg Lys				
1073	1078	1083	1088	
cgg gac tcc aac cag gga atc tac ggc ctc tcg cct gaa ggc gtc gac				3312
Arg Asp Ser Asn Gln Gly Ile Tyr Gly Leu Ser Pro Glu Gly Val Asp				
1089	1094	1099	1104	
cgg gtg gct gcg tcc cgc cac ccc aag cca gag gtg ctg ggc agt tcc				3360
Arg Val Ala Ala Ser Arg His Pro Lys Pro Glu Val Leu Gly Ser Ser				
1105	1110	1115	1120	
gcc gat ggc gcg ctt ctc gtg tct ctc gac ggg ctc cgc ggc cag ttc				3408
Ala Asp Gly Ala Leu Leu Val Ser Leu Asp Gly Leu Arg Gly Gln Phe				
1121	1126	1131	1136	
gag cgc gtg gtg ctg cgc tgg cgg cct cag ccg cct gca gag ggc ccc				3456
Glu Arg Val Val Leu Arg Trp Arg Pro Gln Pro Pro Ala Glu Gly Pro				
1137	1142	1147	1152	
ggc ggt gag ctg act gtg ccg ggc acc acg cgc acc gtc agc ctg ccc				3504
Gly Gly Glu Leu Thr Val Pro Gly Thr Thr Arg Thr Val Ser Leu Pro				
1153	1158	1163	1168	
gac ctc agg ccc ggc acc acc tac cac gtg gag gtc cac ggg gtg cgg				3552
Asp Leu Arg Pro Gly Thr Thr Tyr His Val Glu Val His Gly Val Arg				
1169	1174	1179	1184	
gcg ggg cag acc tcc aag tcc tac gcc ttc atc acc acc aca ggg tcc				3600
Ala Gly Gln Thr Ser Lys Ser Tyr Ala Phe Ile Thr Thr Thr Gly Ser				
1185	1190	1195	1200	
tca ccc ttg ggc ctc ttg ggg act acc gat gag cct cct ccc tca ggc				3648
Ser Pro Leu Gly Leu Leu Gly Thr Thr Asp Glu Pro Pro Pro Ser Gly				
1201	1206	1211	1216	
ccc tcg acg acg caa ggg gcc cag gct cct ctc ctg cag cag cgc ccc				3696
Pro Ser Thr Thr Gln Gly Ala Gln Ala Pro Leu Leu Gln Gln Arg Pro				
1217	1222	1227	1232	
cag gag ctg gga gag ttg agg gtg ctg ggc aga gat gag aca ggg cgc				3744
Gln Glu Leu Gly Glu Leu Arg Val Leu Gly Arg Asp Glu Thr Gly Arg				
1233	1238	1243	1248	
ctc cgt gtg gtc tgg acc gcc cag cct gac acc ttt gcc tac ttc caa				3792
Leu Arg Val Val Trp Thr Ala Gln Pro Asp Thr Phe Ala Tyr Phe Gln				
1249	1254	1259	1264	
ctg cgc atg cgg gtg ccc gag ggg ccg ggg gca cat gag gaa gtg ctg				3840
Leu Arg Met Arg Val Pro Glu Gly Pro Gly Ala His Glu Glu Val Leu				
1265	1270	1275	1280	
cca ggg gac gtc cgc cag gct ctg gtg cct cca ccc cct cct gga acc				3888
Pro Gly Asp Val Arg Gln Ala Leu Val Pro Pro Pro Pro Gly Thr				
1281	1286	1291	1296	

ccg	tat	gag	ctg	tca	ctt	cat	ggg	gtc	cct	cct	ggg	ggc	aag	ccc	tct	3936
Pro	Tyr	Glu	Leu	Ser	Leu	His	Gly	Val	Pro	Pro	Gly	Gly	Lys	Pro	Ser	
1297					1302					1307					1312	
gac	ccc	atc	atc	tac	caa	ggc	att	atg	gac	aag	gat	gag	gag	aag	cct	3984
Asp	Pro	Ile	Ile	Tyr	Gln	Gly	Ile	Met	Asp	Lys	Asp	Glu	Glu	Lys	Pro	
1313					1318					1323					1328	
ggg	aag	tcc	tca	ggc	cca	cca	cgc	ctg	ggt	gag	ctg	acg	gtg	aca	gac	4032
Gly	Lys	Ser	Ser	Gly	Pro	Pro	Arg	Leu	Gly	Glu	Leu	Thr	Val	Thr	Asp	
1329					1334					1339					1344	
agg	acc	tcc	gac	tcc	ttg	ctc	ctg	cgc	tgg	acg	gtc	ccc	gag	ggc	gag	4080
Arg	Thr	Ser	Asp	Ser	Leu	Leu	Leu	Arg	Trp	Thr	Val	Pro	Glu	Gly	Glu	
1345					1350					1355					1360	
ttt	gac	tcc	ttc	gtg	atc	cag	tac	aaa	gac	agg	gac	ggg	cag	ccc	cag	4128
Phe	Asp	Ser	Phe	Val	Ile	Gln	Tyr	Lys	Asp	Arg	Asp	Gly	Gln	Pro	Gln	
1361					1366					1371					1376	
gtg	gtg	ccc	gtg	gaa	gga	ccc	cag	cgc	tcg	gcc	gtc	atc	acc	tcc	ctg	4176
Val	Val	Pro	Val	Glu	Gly	Pro	Gln	Arg	Ser	Ala	Val	Ile	Thr	Ser	Leu	
1377					1382					1387					1392	
gat	cct	ggc	cgc	aag	tac	aaa	ttt	gtc	ctg	tat	ggg	ttt	gtt	ggc	aag	4224
Asp	Pro	Gly	Arg	Lys	Tyr	Lys	Phe	Val	Leu	Tyr	Gly	Phe	Val	Gly	Lys	
1393					1398					1403					1408	
aag	agg	cat	ggt	ccg	ctg	gtg	gct	gaa	gcc	aag	atc	ttg	cct	cag	agt	4272
Lys	Arg	His	Gly	Pro	Leu	Val	Ala	Glu	Ala	Lys	Ile	Leu	Pro	Gln	Ser	
1409					1414					1419					1424	
gac	cca	agt	cca	ggg	act	cca	ccc	cac	ctg	gga	aac	ctg	tgg	gtg	aca	4320
Asp	Pro	Ser	Pro	Gly	Thr	Pro	Pro	His	Leu	Gly	Asn	Leu	Trp	Val	Thr	
1425					1430					1435					1440	
gac	cct	acc	cca	gat	tca	ctg	cac	ctc	tcc	tgg	act	gtc	cct	gag	ggc	4368
Asp	Pro	Thr	Pro	Asp	Ser	Leu	His	Leu	Ser	Trp	Thr	Val	Pro	Glu	Gly	
1441					1446					1451					1456	
cag	ttt	gac	acc	ttc	atg	gtc	cag	tac	agg	gac	agg	gat	gga	cgg	ccc	4416
Gln	Phe	Asp	Thr	Phe	Met	Val	Gln	Tyr	Arg	Asp	Arg	Asp	Gly	Arg	Pro	
1457					1462					1467					1472	
cag	gtg	gta	cct	gtg	gaa	ggg	ccc	gag	cgt	tca	ttt	gtt	gtc	tcc	tca	4464
Gln	Val	Val	Pro	Val	Glu	Gly	Pro	Glu	Arg	Ser	Phe	Val	Val	Ser	Ser	
1473					1478					1483					1488	
ctg	gac	cct	gac	cac	aag	tac	aga	ttc	act	ctg	ttt	gga	att	gcg	aac	4512
Leu	Asp	Pro	Asp	His	Lys	Tyr	Arg	Phe	Thr	Leu	Phe	Gly	Ile	Ala	Asn	

tcc cgt cga aac ccc aag ccc cag tcc cag gct gcc agt tca gca cct	4608
Ser Arg Arg Asn Pro Lys Pro Gln Ser Gln Ala Ala Ser Ser Ala Pro	
1521 1526 1531 1536	
ggc tgg atc tcc ttg ttt aca gct cca gag agg aaa gag gag ccc ccc	4656
Gly Trp Ile Ser Leu Phe Thr Ala Pro Glu Arg Lys Glu Glu Pro Pro	
1537 1542 1547 1552	
cgc cct gag ttc ctg gag cag ccc ctc ctg ggg gaa ctg aca gtg acc	4704
Arg Pro Glu Phe Leu Glu Gln Pro Leu Leu Gly Glu Leu Thr Val Thr	
1553 1558 1563 1568	
ggc gtg acc cca gac tcc ttg cgt ctc tca tgg aca gtg gcc cag ggc	4752
Gly Val Thr Pro Asp Ser Leu Arg Leu Ser Trp Thr Val Ala Gln Gly	
1569 1574 1579 1584	
ccc ttc gac tca ttc atg gtc cag tac aag gat gca cag ggg cag ccc	4800
Pro Phe Asp Ser Phe Met Val Gln Tyr Lys Asp Ala Gln Gly Gln Pro	
1585 1590 1595 1600	
cag gca gtg cct gtt gcg ggg gat gag aat gag gtt act gtc ccc ggc	4848
Gln Ala Val Pro Val Ala Gly Asp Glu Asn Glu Val Thr Val Pro Gly	
1601 1606 1611 1616	
ctg gat ccc gac cgg aag tat aag atg aac ctc tac ggg ctt cgt ggc	4896
Leu Asp Pro Asp Arg Lys Tyr Lys Met Asn Leu Tyr Gly Leu Arg Gly	
1617 1622 1627 1632	
agg cag cgt gtg ggg ccc gag tct gtg gtg gcc aag act gct cct cag	4944
Arg Gln Arg Val Gly Pro Glu Ser Val Val Ala Lys Thr Ala Pro Gln	
1633 1638 1643 1648	
gag gat gtg gac gag acc ccc agc ccc aca gaa ctg ggc acg gag gcc	4992
Glu Asp Val Asp Glu Thr Pro Ser Pro Thr Glu Leu Gly Thr Glu Ala	
1649 1654 1659 1664	
ccg gag tcc ccc gag gag ccg ctc ctg ggg gag ctg aca gtg aca gga	5040
Pro Glu Ser Pro Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly	
1665 1670 1675 1680	
tcc tcc cct gat tcg ctg agc ctc ttc tgg acc gtc ccc cag ggc agc	5088
Ser Ser Pro Asp Ser Leu Ser Leu Phe Trp Thr Val Pro Gln Gly Ser	
1681 1686 1691 1696	
ttc gac tct ttc acc gtg cag tac aag gac agg gat ggg cgg ccc cgg	5136
Phe Asp Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Arg Pro Arg	
1697 1702 1707 1712	
gcg gtg cgt gtt ggg ggc aag gag agt gag gtc acc gtg gga ggc cta	5184
Ala Val Arg Val Gly Gly Lys Glu Ser Glu Val Thr Val Gly Gly Leu	
1713 1718 1723 1728	
gag ccc ggg cac aag tac aag atg cac ctg tac ggc ctc cac gag ggg	5232
Glu Pro Gly His Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly	
1729 / 1734 1739 1744	
cag cgc gtg ggc ccg gtg tcc gcc gtg ggc gtg aca ggg acc cac act	5280



Gln Arg Val Gly Pro Val Ser Ala Val Gly Val Thr Gly Thr His Thr	
1745	1750 1755 1760
ggg ctc tgt gag gcc ctg tgc ctg gtc cct ggg atg agg ccc ttt agg	5328
Gly Leu Cys Glu Ala Leu Cys Leu Val Pro Gly Met Arg Pro Phe Arg	
1761	1766 1771 1776
aaa gaa atg ggc atc agt gcg cat tat cag agc agc aaa agg acg aag	5376
Lys Glu Met Gly Ile Ser Ala His Tyr Gln Ser Ser Lys Arg Thr Lys	
1777	1782 1787 1792
cag ctg gag tcc gcc aag ctg ggg gct gtg tct ggc agc aca cac agt	5424
Gln Leu Glu Ser Ala Lys Leu Gly Ala Val Ser Gly Ser Thr His Ser	
1793	1798 1803 1808
gca gtt gcc agg ggg aga gcc tca gac acc gag cag gga cct agt gaa	5472
Ala Val Ala Arg Gly Arg Ala Ser Asp Thr Glu Gln Gly Pro Ser Glu	
1809	1814 1819 1824
gga ctg ttg acc aga cag atg ttc aga tca atg cgc ttt tac atc aaa	5520
Gly Leu Leu Thr Arg Gln Met Phe Arg Ser Met Arg Phe Tyr Ile Lys	
1825	1830 1835 1840
acc atc atg cgg gtt cca caa atg caa cag aca tcg ctg gcc cca caa	5568
Thr Ile Met Arg Val Pro Gln Met Gln Gln Thr Ser Leu Ala Pro Gln	
1841	1846 1851 1856
caa gaa gag acc cct cca gcc act gag tcc ccg ctg gag cca cgc cta	5616
Gln Glu Glu Thr Pro Pro Ala Thr Glu Ser Pro Leu Glu Pro Arg Leu	
1857	1862 1867 1872
gga gag ctg aca gtg aca gat gtg acc ccc aac tct gtg ggc ctc tcc	5664
Gly Glu Leu Thr Val Thr Asp Val Thr Pro Asn Ser Val Gly Leu Ser	
1873	1878 1883 1888
tgg aca gtc ccc gag ggc cag ttt gac tcc ttc ata gtc cag tac aag	5712
Trp Thr Val Pro Glu Gly Gln Phe Asp Ser Phe Ile Val Gln Tyr Lys	
1889	1894 1899 1904
gac aag gac ggg cag ccc cag gtg gtg ccg gtg gcg gca gac cag cga	5760
Asp Lys Asp Gly Gln Pro Gln Val Val Pro Val Ala Ala Asp Gln Arg	
1905	1910 1915 1920
gag gtc aca gtc tac aac ctg gag cct gag aga aaa tat aag atg aac	5808
Glu Val Thr Val Tyr Asn Leu Glu Pro Glu Arg Lys Tyr Lys Met Asn	
1921	1926 1931 1936
atg tat gga cta cat gat ggg caa cgc atg ggc ccc ctg tct gtg gtc	5856
Met Tyr Gly Leu His Asp Gly Gln Arg Met Gly Pro Leu Ser Val Val	
1937	1942 1947 1952
atc gtg acg gcc cca gcc aca gag gcc tcc aag cct ccc ctg gag cca	5904
Ile Val Thr Ala Pro Ala Thr Glu Ala Ser Lys Pro Pro Leu Glu Pro	
1953	1958 1963 1968
cgc cta ggg gag ctg aca gtg acg gat ata acc cct gac tct gtg ggc	5952
Arg Leu Gly Glu Leu Thr Val Thr Asp Ile Thr Pro Asp Ser Val Gly	

1969	1974	1979	1984
ctc tca tgg aca gtc cct gag ggt gaa ttc gac tcc ttt gtg gtt cag Leu Ser Trp Thr Val Pro Glu Gly Glu Phe Asp Ser Phe Val Val Gln 1985	1990	1995	2000
6000			
tac aag gac agg gac ggg cag ccc cag gtg gtg ccc gtg gct gca gat Tyr Lys Asp Arg Asp Gly Gln Pro Gln Val Val Pro Val Ala Ala Asp 2001	2006	2011	2016
6048			
cag cgg gag gtc act atc cct gac ctg gaa ccc tcc cgc aag tac aag Gln Arg Glu Val Thr Ile Pro Asp Leu Glu Pro Ser Arg Lys Tyr Lys 2017	2022	2027	2032
6096			
ttc ctg ctc ttt ggg atc cag gat ggg aaa cga cgc agc cca gtc tct Phe Leu Leu Phe Gly Ile Gln Asp Gly Lys Arg Arg Ser Pro Val Ser 2033	2038	2043	2048
6144			
gtg gag gca aag acg gtt gcc cga ggt gac gcc agc cca ggg gcc cca Val Glu Ala Lys Thr Val Ala Arg Gly Asp Ala Ser Pro Gly Ala Pro 2049	2054	2059	2064
6192			
ccc cgc ctt ggg gag ctg tgg gtg aca gac ccc acc cca gac tca ctg Pro Arg Leu Gly Glu Leu Trp Val Thr Asp Pro Thr Pro Asp Ser Leu 2065	2070	2075	2080
6240			
cgc ctc tcc tgg acg gtt cct gag ggc cag ttc gac tct ttt gtg gtc Arg Leu Ser Trp Thr Val Pro Glu Gly Gln Phe Asp Ser Phe Val Val 2081	2086	2091	2096
6288			
cag ttc aag gac aaa gac ggg ccc cag gtg gtg ccc gtg gag ggc cat Gln Phe Lys Asp Lys Asp Gly Pro Gln Val Val Pro Val Glu Gly His 2097	2102	2107	2112
6336			
gag cgc tct gtc act gtc acc cct ctg gat gcc ggc cgc aag tac aga Glu Arg Ser Val Thr Val Thr Pro Leu Asp Ala Gly Arg Lys Tyr Arg 2113	2118	2123	2128
6384			
ttc ctc ctc tat ggc ctc ctg ggc aag aag cgc cat ggc cct ctc act Phe Leu Leu Tyr Gly Leu Leu Gly Lys Lys Arg His Gly Pro Leu Thr 2129	2134	2139	2144
6432			
gcc gac ggc acc acg gaa gcc cgg agt gct atg gat gat act gga aca Ala Asp Gly Thr Thr Glu Ala Arg Ser Ala Met Asp Asp Thr Gly Thr 2145	2150	2155	2160
6480			
aag cgt ccc cca aaa ccc cgt ctg ggg gag gag ctg cag gtg acc acc Lys Arg Pro Pro Lys Pro Arg Leu Gly Glu Glu Leu Gln Val Thr Thr 2161	2166	2171	2176
6528			
gtg acc cag aac tcc gtg ggc ctc tcc tgg aca gtc cct gag ggc cag Val Thr Gln Asn Ser Val Gly Leu Ser Trp Thr Val Pro Glu Gly Gln 2177	2182	2187	2192
6576			
ttt gac tcc ttt gtg gtc cag tac aaa gac agg gac ggg cag ccc cag Phe Asp Ser Phe Val Val Gln Tyr Lys Asp Arg Asp Gly Gln Pro Gln 2193	2198	2203	2208
6624			

gtg gtg ccc gtg gag ggc agc ctc agg gag gtc agc gtg ccg ggc ctg Val Val Pro Val Glu Gly Ser Leu Arg Glu Val Ser Val Pro Gly Leu 2209 2214 2219 2224	6672
gac cct gcc cac agg tac aag ctg ctg ctc tac ggg ctg cac cac ggc Asp Pro Ala His Arg Tyr Lys Leu Leu Leu Tyr Gly Leu His His Gly 2225 2230 2235 2240	6720
aag cgt gtg ggc ccc atc tcg gcc gtc gcc att act gcg cct gag ccc Lys Arg Val Gly Pro Ile Ser Ala Val Ala Ile Thr Ala Pro Glu Pro 2241 2246 2251 2256	6768
cac ctc ggg gag ttg aca gtg gag gag gcc acg tca <sup>5</sup> cac acc ctg cat His Leu Gly Glu Leu Thr Val Glu Glu Ala Thr Ser His Thr Leu His 2257 2262 2267 2272	6816
ctc tcc tgg atg gtg act gag gga gaa ttt gac tcc ttc gaa atc cag Leu Ser Trp Met Val Thr Glu Gly Glu Phe Asp Ser Phe Glu Ile Gln 2273 2278 2283 2288	6864
tac aca gat aga gac ggg caa ctc caa atg gtc cgc ata gga ggt gac Tyr Thr Asp Arg Asp Gly Gln Leu Gln Met Val Arg Ile Gly Gly Asp 2289 2294 2299 2304	6912
cgg aat gac atc acc ctc tct ggc ctg gaa tcc gac cac aga tac ctg Arg Asn Asp Ile Thr Leu Ser Gly Leu Glu Ser Asp His Arg Tyr Leu 2305 2310 2315 2320	6960
gtg acc ctg tat ggt ttc agt gat ggg aag cat gta ggt cct gtc cat Val Thr Leu Tyr Gly Phe Ser Asp Gly Lys His Val Gly Pro Val His 2321 2326 2331 2336	7008
gtc gag gcc ctg aca gtc ccg gag gag gag aag cct tca gaa cct ccc Val Glu Ala Leu Thr Val Pro Glu Glu Glu Lys Pro Ser Glu Pro Pro 2337 2342 2347 2352	7056
acc gca acc ccc gag ccc ccc atc aag cct cgc ctg ggg gag ctg acc Thr Ala Thr Pro Glu Pro Pro Ile Lys Pro Arg Leu Gly Glu Leu Thr 2353 2358 2363 2368	7104
gtg aca gat gcc acc cct gac tcc ctc agc ctg tcc tgg aca gtt ccc Val Thr Asp Ala Thr Pro Asp Ser Leu Ser Leu Ser Trp Thr Val Pro 2369 2374 2379 2384	7152
gag gga cag ttt gac cac ttc ctg gtc cag tac agg aat gga gat ggg Glu Gly Gln Phe Asp His Phe Leu Val Gln Tyr Arg Asn Gly Asp Gly 2385 2390 2395 2400	7200
cag ccc aag gca gtg agg gtg cca ggg cac gag gaa ggg gtc acc atc Gln Pro Lys Ala Val Arg Val Pro Gly His Glu Glu Gly Val Thr Ile 2401 2406 2411 2416	7248
tcg ggc ctg gag cca gac cat aaa <sup>1</sup> tac aag atg aac ctg tac ggc ttc Ser Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly Phe 2417 2422 2427 2432	7296

cac ggt ggc cag cgc atg ggc cct gtg tct gtc gtc ggg gtg aca gct His Gly Gly Gln Arg Met Gly Pro Val Ser Val Val Gly Val Thr Ala 2433 2438 2443 2448	7344
gca gag gaa gag acc ccc agc ccc aca gaa ccc agc atg gag gcc ccg Ala Glu Glu Glu Thr Pro Ser Pro Thr Glu Pro Ser Met Glu Ala Pro 2449 2454 2459 2464	7392
gag ccc gct gag gag ccg ctc ctg ggg gag cta aca gtg aca gga tcc Glu Pro Ala Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly Ser 2465 2470 2475 2480	7440
tcc cct gac tcg ctg agc ctc tcc tgg acc gtc ccc cag ggc cgc ttc Ser Pro Asp Ser Leu Ser Leu Ser Trp Thr Val Pro Gln Gly Arg Phe 2481 2486 2491 2496	7488
gac tcc ttc acc gtg cag tac aag gac agg gac ggg cgg ccc cag gtg Asp Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Arg Pro Gln Val 2497 2502 2507 2512	7536
gtg cgt gtt ggg ggc gag gag agt gaa gtc acc gtg ggg ggc ctg gag Val Arg Val Gly Gly Glu Glu Ser Glu Val Thr Val Gly Gly Leu Glu 2513 2518 2523 2528	7584
cct ggg cgc aag tac aag atg cac ctg tac ggc ctc cac gag ggg cgg Pro Gly Arg Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly Arg 2529 2534 2539 2544	7632
cgc gtg ggc cca gtg tct gct gtg ggc gtc acg gcc ccc gaa gag gag Arg Val Gly Pro Val Ser Ala Val Gly Val Thr Ala Pro Glu Glu Glu 2545 2550 2555 2560	7680
tcc cct gat gct cct ctt gca aag ctg cgc cta ggg cag atg aca gtg Ser Pro Asp Ala Pro Leu Ala Lys Leu Arg Leu Gly Gln Met Thr Val 2561 2566 2571 2576	7728
aga gac atc acc tcc gac tcc ctc agc ctc tcc tgg aca gtc ccc gag Arg Asp Ile Thr Ser Asp Ser Leu Ser Leu Ser Trp Thr Val Pro Glu 2577 2582 2587 2592	7776
ggc cag ttt gac cat ttc ttg gtc cag ttt aag aat ggg gac ggg cag Gly Gln Phe Asp His Phe Leu Val Gln Phe Lys Asn Gly Asp Gly Gln 2593 2598 2603 2608	7824
ccc aag gcg gtg cgg gtg ccg gga cac gag gat ggg gtc acc atc tcg Pro Lys Ala Val Arg Val Pro Gly His Glu Asp Gly Val Thr Ile Ser 2609 2614 2619 2624	7872
ggc ctg gag cca gac cac aag tac aag atg aac ctg tac ggc ttc cac Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly Phe His 2625 2630 2635 2640	7920
ggt ggc cag cgc gtg ggc ccc gtg tct gct gtt ggt tta act gcc cca Gly Gly Gln Arg Val Gly Pro Val Ser Ala Val Gly Leu Thr Ala Pro 2641 2646 2651 2656	7968
gga aag gat gaa gaa atg gcc cca gcc tcg aca gaa cct ccc acc cct	8016



2881	2886	2891	2896	
cct ctc ctg ggg gag ctg aca gtg aca gga tcc tcc cct gac tcg ctg				8736
Pro Leu Leu Gly Glu Leu Thr Val Thr Gly Ser Ser Pro Asp Ser Leu				
2897	2902	2907	2912	
agc ctt tcc tgg acc gtc ccc cag ggc cgc ttt gac tcc ttc acc gtg				8784
Ser Leu Ser Trp Thr Val Pro Gln Gly Arg Phe Asp Ser Phe Thr Val				
2913	2918	2923	2928	
cag tac aag gac agg gac ggg cgg ccc cag gcg gtg cgt gtt ggg ggc				8832
Gln Tyr Lys Asp Arg Asp Gly Arg Pro Gln Ala Val Arg Val Gly Gly				
2929	2934	2939	2944	
cag gag agc aag gtc act gtg agg ggc ctg gag cct ggg cgc aag tac				8880
Gln Glu Ser Lys Val Thr Val Arg Gly Leu Glu Pro Gly Arg Lys Tyr				
2945	2950	2955	2960	
aag atg cac ctg tac ggc ctc cac gag ggg cgg cgc ctg ggc ccg gtg				8928
Lys Met His Leu Tyr Gly Leu His Glu Gly Arg Arg Leu Gly Pro Val				
2961	2966	2971	2976	
tct gcc gtg ggc gtc aca gag gat gaa gcc gag acc acc caa gca gtg				8976
Ser Ala Val Gly Val Thr Glu Asp Glu Ala Glu Thr Thr Gln Ala Val				
2977	2982	2987	2992	
cct acc atg acc cct gag ccc ccc atc aag cct cgc ctg ggg gag ctg				9024
Pro Thr Met Thr Pro Glu Pro Pro Ile Lys Pro Arg Leu Gly Glu Leu				
2993	2998	3003	3008	
acc atg aca gat gcc acc cct gac tcc ctc agc ctg tcc tgg acg gtt				9072
Thr Met Thr Asp Ala Thr Pro Asp Ser Leu Ser Leu Ser Trp Thr Val				
3009	3014	3019	3024	
ccc gag ggc cag ttt gac cac ttc ctg gtc cag tac agg aat ggg gat				9120
Pro Glu Gly Gln Phe Asp His Phe Leu Val Gln Tyr Arg Asn Gly Asp				
3025	3030	3035	3040	
ggg cag ccc aag gcg gtg cgg gtg ccg ggg cac gag gac ggg gtc acc				9168
Gly Gln Pro Lys Ala Val Arg Val Pro Gly His Glu Asp Gly Val Thr				
3041	3046	3051	3056	
atc tca ggc ctg gag cca gac cat aaa tac aag atg aac ctg tac ggc				9216
Ile Ser Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly				
3057	3062	3067	3072	
ttc cac ggt ggc cag cgc gtg ggc ccc atc tct gtc att ggg gtg acg				9264
Phe His Gly Gly Gln Arg Val Gly Pro Ile Ser Val Ile Gly Val Thr				
3073	3078	3083	3088	
gct gca gag gaa gag acc ccc agc ccc acg gaa ctc agc act gag gcc				9312
Ala Ala Glu Glu Glu Thr Pro Ser Pro Thr Glu Leu Ser Thr Glu Ala				
3089	3094	3099	3104	
cgg gag ccc cct gag gag ccg ctc ctg ggg/gag ctg aca gtg aca gga				9360
Arg Glu Pro Pro Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly				
3105	3110	3115	3120	

tcc tcc cct gac tcg ctg agc ctc tcc tgg acc atc ccc cag ggc cac Ser Ser Pro Asp Ser Leu Ser Leu Ser Trp Thr Ile Pro Gln Gly His	9408
3121                      3126                      3131                      3136	
ttc gac tcc ttc acc gtg cag tac aag gac agg gac ggg cgg ccc cag Phe Asp Ser Phe Thr Val Gln Tyr Lys Asp Arg Asp Gly Arg Pro Gln	9456
3137                      3142                      3147                      3152	
gtg atg cgt gtc agg ggc gag gag agc gag gtc acc gtg ggg ggc ctg Val Met Arg Val Arg Gly Glu Glu Ser Glu Val Thr Val Gly Gly Leu	9504
3153                      3158                      3163                      3168	
gag ccc ggg cgc aaa tac aag atg cac ctg tac ggc ctc cac gag ggg Glu Pro Gly Arg Lys Tyr Lys Met His Leu Tyr Gly Leu His Glu Gly	9552
3169                      3174                      3179                      3184	
cgg cgt gtg ggc ccg gtg tcc acc gtg ggt gtg aca gct cca gag gat Arg Arg Val Gly Pro Val Ser Thr Val Gly Val Thr Ala Pro Glu Asp	9600
3185                      3190                      3195                      3200	
gaa gca gag acc acc caa gca gtg ccc acc aca acc cct gag ccc ccc Glu Ala Glu Thr Thr Gln Ala Val Pro Thr Thr Thr Pro Glu Pro Pro	9648
3201                      3206                      3211                      3216	
aac aag cct cgc ctc ggg gag ctg acc gtg aca gat gcc acc cct gac Asn Lys Pro Arg Leu Gly Glu Leu Thr Val Thr Asp Ala Thr Pro Asp	9696
3217                      3222                      3227                      3232	
tcc ctc agc ctg tcc tgg atg gtc ccc gag ggc cag ttt gac cac ttc Ser Leu Ser Leu Ser Trp Met Val Pro Glu Gly Gln Phe Asp His Phe	9744
3233                      3238                      3243                      3248	
ctg gtc cag tac agg aat ggg gat ggg cag ccc aag gtg gtg cgg gtg Leu Val Gln Tyr Arg Asn Gly Asp Gly Gln Pro Lys Val Val Arg Val	9792
3249                      3254                      3259                      3264	
ccg ggg cac gag gac ggg gtc acc atc tca ggc ctg gag cca gac cac Pro Gly His Glu Asp Gly Val Thr Ile Ser Gly Leu Glu Pro Asp His	9840
3265                      3270                      3275                      3280	
aag tac aag atg aac ctg tac ggc ttc cac ggt ggc cag cgc gtg ggc Lys Tyr Lys Met Asn Leu Tyr Gly Phe His Gly Gly Gln Arg Val Gly	9888
3281                      3286                      3291                      3296	
ccc atc tct gtc att ggg gtg aca gct gca gag gaa gaa act ccc gcc Pro Ile Ser Val Ile Gly Val Thr Ala Ala Glu Glu Glu Thr Pro Ala	9936
3297                      3302                      3307                      3312	
ccc aca gaa ccc agc acg gag gcc ccg gag ccc cct gag gag ccg ctc Pro Thr Glu Pro Ser Thr Glu Ala Pro Glu Pro Pro Glu Glu Pro Leu	9984
3313                      3318                      3323                      3328	
ctg ggg gag ctg aca gtg aca gga tcc tcc cct gac tcg ctg agc ctc Leu Gly Glu Leu Thr Val Thr Gly Ser Ser Pro Asp Ser Leu Ser Leu	10032
3329                      3334                      3339                      3344	

tcc tgg acc atc ccc cag ggc cgc ttc gac tcc ttc act gtg cag tac	10080
Ser Trp Thr Ile Pro Gln Gly Arg Phe Asp Ser Phe Thr Val Gln Tyr	
3345 3350 3355 3360	
aag gac agg gac ggg cgg ccc cag gtg gtg cgt gtc agg ggc gag gag	10128
Lys Asp Arg Asp Gly Arg Pro Gln Val Val Arg Val Arg Gly Glu Glu	
3361 3366 3371 3376	
agc gag gtc acc gtg ggg ggc ctg gag ccc ggg tgc aaa tac aag atg	10176
Ser Glu Val Thr Val Gly Gly Leu Glu Pro Gly Cys Lys Tyr Lys Met	
3377 3382 3387 3392	
cac ctg tac ggc ctc cac gag ggg cag cgc gtg ggc cca gtg tcc gct	10224
His Leu Tyr Gly Leu His Glu Gly Gln Arg Val Gly Pro Val Ser Ala	
3393 3398 3403 3408	
gtg ggt gtg aca gct cca aag gat gaa gcc gag acc acc caa gca gtg	10272
Val Gly Val Thr Ala Pro Lys Asp Glu Ala Glu Thr Thr Gln Ala Val	
3409 3414 3419 3424	
cct acc atg acc cct gag ccc ccc atc aag cct cgc ctg ggg gag ctg	10320
Pro Thr Met Thr Pro Glu Pro Pro Ile Lys Pro Arg Leu Gly Glu Leu	
3425 3430 3435 3440	
acc gtg aca gat gcc acc ccc gac tcc ctc agc ctg tcc tgg atg gtt	10368
Thr Val Thr Asp Ala Thr Pro Asp Ser Leu Ser Leu Ser Trp Met Val	
3441 3446 3451 3456	
ccc gag ggc cag ttt gac cac ttc ctg gtc cag tac agg aat ggg gat	10416
Pro Glu Gly Gln Phe Asp His Phe Leu Val Gln Tyr Arg Asn Gly Asp	
3457 3462 3467 3472	
ggg cag ccc aag gcg gtg cgg gtg ccg ggg cac gag gac ggg gtc acc	10464
Gly Gln Pro Lys Ala Val Arg Val Pro Gly His Glu Asp Gly Val Thr	
3473 3478 3483 3488	
atc tca ggc ctg gag cca gac cat aaa tac aag atg aac ctg tac ggc	10512
Ile Ser Gly Leu Glu Pro Asp His Lys Tyr Lys Met Asn Leu Tyr Gly	
3489 3494 3499 3504	
ttc cac ggt ggc cag cgc gta ggc cct gtg tct gcc att ggg gtg acg	10560
Phe His Gly Gly Gln Arg Val Gly Pro Val Ser Ala Ile Gly Val Thr	
3505 3510 3515 3520	
gag gaa gag acc ccc agc ccc aca gaa ccc agc act gag gcc ccg gag	10608
Glu Glu Glu Thr Pro Ser Pro Thr Glu Pro Ser Thr Glu Ala Pro Glu	
3521 3526 3531 3536	
gcc cct gag gag ccg ctc ctg ggg gag ttg aca gtg aca gga tcc tcc	10656
Ala Pro Glu Glu Pro Leu Leu Gly Glu Leu Thr Val Thr Gly Ser Ser	
3537 3542 3547 3552	
cct gac tcg ctg agc ctc tcc tgg acc gtc ccc cag ggc cgc ttc gac	10704
Pro Asp Ser Leu Ser Leu Ser Trp Thr Val Pro Gln Gly Arg Phe Asp	
3553 3558 3563 3568	
tcc ttc acc gtg cag tac aag gac agg gac ggg cag ccc cag gtg gtg	10752





3793	3798	3803	3808	
atc tct gct gac agc acc aca gct ccc ctg gag aag gag cta cct ccc				11472
Ile Ser Ala Asp Ser Thr Thr Ala Pro Leu Glu Lys Glu Leu Pro Pro				
3809	3814	3819	3824	
cac ctg ggg gaa ctg acc gtg gct gag gag acc tcc agc tct ctg cgc				11520
His Leu Gly Glu Leu Thr Val Ala Glu Glu Thr Ser Ser Ser Leu Arg				
3825	3830	3835	3840	
ctg tcc tgg acg gta gcc cag ggc ccc ttt gac tcc ttc gtg gtc cag				11568
Leu Ser Trp Thr Val Ala Gln Gly Pro Phe Asp Ser Phe Val Val Gln				
3841	3846	3851	3856	
tac agg gac acg gac ggg cag ccc agg gca gtg cct gtg gcc gca gac				11616
Tyr Arg Asp Thr Asp Gly Gln Pro Arg Ala Val Pro Val Ala Ala Asp				
3857	3862	3867	3872	
cag cgc aca gtc acc gta gag gac ctg gag cct ggc aag aaa tac aag				11664
Gln Arg Thr Val Thr Val Glu Asp Leu Glu Pro Gly Lys Lys Tyr Lys				
3873	3878	3883	3888	
ttt ctg ctc tac ggg ctc ctt ggg gga aag cgc ctg ggc ccg gtc tct				11712
Phe Leu Leu Tyr Gly Leu Leu Gly Gly Lys Arg Leu Gly Pro Val Ser				
3889	3894	3899	3904	
gcc ctg gga atg aca gcc cca gaa gag gac aca cca gcc cca gag tta				11760
Ala Leu Gly Met Thr Ala Pro Glu Glu Asp Thr Pro Ala Pro Glu Leu				
3905	3910	3915	3920	
gcc cca gag gcc cct gag cct cct gaa gag ccc cgc cta gga gtg ctg				11808
Ala Pro Glu Ala Pro Glu Pro Pro Glu Glu Pro Arg Leu Gly Val Leu				
3921	3926	3931	3936	
acc gtg acc gac aca acc cca gac tcc atg cgc ctc tcg tgg agc gtg				11856
Thr Val Thr Asp Thr Thr Pro Asp Ser Met Arg Leu Ser Trp Ser Val				
3937	3942	3947	3952	
gcc cag ggc ccc ttt gat tcc ttc gtg gtc cag tat gag gac acg aac				11904
Ala Gln Gly Pro Phe Asp Ser Phe Val Val Gln Tyr Glu Asp Thr Asn				
3953	3958	3963	3968	
ggg cag ccc cag gcc ttg ctc gtg gac ggc gac cag agc aag atc ctc				11952
Gly Gln Pro Gln Ala Leu Leu Val Asp Gly Asp Gln Ser Lys Ile Leu				
3969	3974	3979	3984	
atc tca ggc ctg gag ccc agc acc ccc tac agg ttc ctc ctc tat ggc				12000
Ile Ser Gly Leu Glu Pro Ser Thr Pro Tyr Arg Phe Leu Leu Tyr Gly				
3985	3990	3995	4000	
ctc cat gaa ggg aag cgc ctg ggg ccc ctc tca gct gag ggc acc aca				12048
Leu His Glu Gly Lys Arg Leu Gly Pro Leu Ser Ala Glu Gly Thr Thr				
4001	4006	4011	4016	
ggg ctg gct cct gct ggt cag acc tca gag gag tca agg ccc cgc ctg				12096
Gly Leu Ala Pro Ala Gly Gln Thr Ser Glu Glu Ser Arg Pro Arg Leu				
4017	4022	4027	4032	

tcc cag ctg tct gtg act gac gtg acc acc agt tca ctg agg ctc aac	12144
Ser Gln Leu Ser Val Thr Asp Val Thr Thr Ser Ser Leu Arg Leu Asn	
4033 4038 4043 4048	
tgg gag gcc cca ccg ggg gcc ttc gac tcc ttc ctg ctc cgc ttt ggg	12192
Trp Glu Ala Pro Pro Gly Ala Phe Asp Ser Phe Leu Leu Arg Phe Gly	
4049 4054 4059 4064	
gtt cca tca cca agc act ctg gag ccg cat ccg cgt cca ctg ctg cag	12240
Val Pro Ser Pro Ser Thr Leu Glu Pro His Pro Arg Pro Leu Leu Gln	
4065 4070 4075 4080	
cgc gag ctg atg gtg ccg ggg aca cgg cac tgc gcc <sup>4</sup> gtg ctc cgg gac	12288
Arg Glu Leu Met Val Pro Gly Thr Arg His Ser Ala Val Leu Arg Asp	
4081 4086 4091 4096	
ctg cgt tcc ggg act ctg tac agc ctg aca ctg tat ggg ctg cga gga	12336
Leu Arg Ser Gly Thr Leu Tyr Ser Leu Thr Leu Tyr Gly Leu Arg Gly	
4097 4102 4107 4112	
ccc cac aag gcc gac agc atc cag gga acc gcc cgc acc ctc agc cca	12384
Pro His Lys Ala Asp Ser Ile Gln Gly Thr Ala Arg Thr Leu Ser Pro	
4113 4118 4123 4128	
gtt ctg gag agc ccc cgt gac ctc caa ttc agt gaa atc agg gag acc	12432
Val Leu Glu Ser Pro Arg <sup>4</sup> Asp Leu Gln Phe Ser Glu Ile Arg Glu Thr	
4129 4134 4139 4144	
tca gcc aag gtc aac tgg atg ccc cca cca tcc cgg gcg gac agc ttc	12480
Ser Ala Lys Val Asn Trp Met Pro Pro Pro Ser Arg Ala Asp Ser Phe	
4145 4150 4155 4160	
aaa gtc tcc tac cag ctg gcg gac gga ggg gag cct cag agt gtg cag	12528
Lys Val Ser Tyr Gln Leu Ala Asp Gly Gly Glu Pro Gln Ser Val Gln	
4161 4166 4171 4176	
gtg gat ggc cag gcc cgg acc cag aaa ctc cag ggg ctg atc cca ggc	12576
Val Asp Gly Gln Ala Arg Thr Gln Lys Leu Gln Gly Leu Ile Pro Gly	
4177 4182 4187 4192	
gct cgc tat gag gtg acc gtg gtc tgc gtc cga ggc ttt gag gag agt	12624
Ala Arg Tyr Glu Val Thr Val Val Ser Val Arg Gly Phe Glu Glu Ser	
4193 4198 4203 4208	
gag cct ctc aca ggc ttc ctc acc acg gtt cct gac ggt ccc aca cag	12672
Glu Pro Leu Thr Gly Phe Leu Thr Thr Val Pro Asp Gly Pro Thr Gln	
4209 4214 4219 4224	
ttg cgt gca ctg aac ttg acc gag gga ttc gcc gtg ctg cac tgg aag	12720
Leu Arg Ala Leu Asn Leu Thr Glu Gly Phe Ala Val Leu His Trp Lys	
4225 4230 4235 4240	
ccc ccc cag aat cct gtg gac acc tat gac gtc cag gtc aca gcc cct	12768
Pro Pro Gln Asn Pro Val Asp Thr Tyr Asp Val Gln Val Thr Ala Pro	
4241 4246 4251 4256	

ggg gcc ccg cct ctg cag gcg gag acc cca ggc agc gcg gtg gac tac	12816
Gly Ala Pro Pro Leu Gln Ala Glu Thr Pro Gly Ser Ala Val Asp Tyr	
4257 4262 4267 4272	
ccc ctg cat gac ctt gtc ctc cac acc aac tac acc gcc aca gtg cgt	12864
Pro Leu His Asp Leu Val Leu His Thr Asn Tyr Thr Ala Thr Val Arg	
4273 4278 4283 4288	
ggc ctg cgg ggc ccc aac ctc act tcc cca gcc agc atc acc ttc acc	12912
Gly Leu Arg Gly Pro Asn Leu Thr Ser Pro Ala Ser Ile Thr Phe Thr	
4289 4294 4299 4304	
aca ggg cta gag gcc cct cgg gac ttg gag gcc aag gaa gtg acc ccc	12960
Thr Gly Leu Glu Ala Pro Arg Asp Leu Glu Ala Lys Glu Val Thr Pro	
4305 4310 4315 4320	
cgc acc gcc ctg ctc act tgg act gag ccc cca gtc cgg ccc gca ggc	13008
Arg Thr Ala Leu Leu Thr Trp Thr Glu Pro Pro Val Arg Pro Ala Gly	
4321 4326 4331 4336	
tac ctg ctc agc ttc cac acc cct ggt gga cag aac cag gag atc ctg	13056
Tyr Leu Leu Ser Phe His Thr Pro Gly Gly Gln Asn Gln Glu Ile Leu	
4337 4342 4347 4352	
ctc cca gga ggg atc aca tct cac cag ctc ctt ggc ctc ttt ccc tcc	13104
Leu Pro Gly Gly Ile Thr Ser His Gln Leu Leu Gly Leu Phe Pro Ser	
4353 4358 4363 4368	
acc tcc tac aat gca cgg ctc cag gcc atg tgg ggc cag agc ctc ctg	13152
Thr Ser Tyr Asn Ala Arg Leu Gln Ala Met Trp Gly Gln Ser Leu Leu	
4369 4374 4379 4384	
ccg ccc gtg tcc acc tct ttc acc acg ggt ggg ctg cgg atc ccc ttc	13200
Pro Pro Val Ser Thr Ser Phe Thr Thr Gly Gly Leu Arg Ile Pro Phe	
4385 4390 4395 4400	
ccc agg gac tgc ggg gag gag atg cag aac gga gcc ggt gcc tcc agg	13248
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acc agc acc atc ttc ctc aac ggc aac cgc gag cgg ccc ctg aac gtg	13296
Thr Ser Thr Ile Phe Leu Asn Gly Asn Arg Glu Arg Pro Leu Asn Val	
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Phe Cys Asp Met Glu Thr Asp Gly Gly Gly Trp Leu Val Phe Gln Arg	
4433 4438 4443 4448	
cgc atg gat gga cag aca gac ttc tgg agg gac tgg gag gac tat gcc	13392
Arg Met Asp Gly Gln Thr Asp Phe Trp Arg Asp Trp Glu Asp Tyr Ala	
4449 4454 4459 4464	
cat ggt ttt ggg aac atc tct gga gag ttc tgg ctg ggc aat gag gcc	13440
His Gly Phe Gly Asn Ile Ser Gly Glu Phe Trp Leu Gly Asn Glu Ala	
4465 4470 4475 4480	
ctg cac agc ctg aca cag gca ggt gac tac tcc atg cgc gtg gac ctg	13488

Leu	His	Ser	Leu	Thr	Gln	Ala	Gly	Asp	Tyr	Ser	Met	Arg	Val	Asp	Leu	
4481					4486					4491					4496	
cgg	gct	ggg	gac	gag	gct	gtg	ttc	gcc	cag	tac	gac	tcc	ttc	cac	gta	13536
Arg	Ala	Gly	Asp	Glu	Ala	Val	Phe	Ala	Gln	Tyr	Asp	Ser	Phe	His	Val	
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gac	tcg	gct	gcg	gag	tac	tac	cgc	ctc	cac	ttg	gag	ggc	tac	cac	ggc	13584
Asp	Ser	Ala	Ala	Glu	Tyr	Tyr	Arg	Leu	His	Leu	Glu	Gly	Tyr	His	Gly	
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acc	gca	ggg	gac	tcc	atg	agc	tac	cac	agc	ggc	agt	gtc	ttc	tct	gcc	13632
Thr	Ala	Gly	Asp	Ser	Met	Ser	Tyr	His	Ser	Gly	Ser	Val	Phe	Ser	Ala	
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cgt	gat	cgg	gac	ccc	aac	agc	ttg	ctc	atc	tcc	tgc	gct	gtc	tcc	tac	13680
Arg	Asp	Arg	Asp	Pro	Asn	Ser	Leu	Leu	Ile	Ser	Cys	Ala	Val	Ser	Tyr	
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cga	ggg	gcc	tgg	tgg	tac	agg	aac	tgc	cac	tac	gcc	aac	ctc	aac	ggg	13728
Arg	Gly	Ala	Trp	Trp	Tyr	Arg	Asn	Cys	His	Tyr	Ala	Asn	Leu	Asn	Gly	
4561					4566					4571					4576	
ctc	tac	ggg	agc	aca	gtg	gac	cat	cag	gga	gtg	agc	tgg	tac	cac	tgg	13776
Leu	Tyr	Gly	Ser	Thr	Val	Asp	His	Gln	Gly	Val	Ser	Trp	Tyr	His	Trp	
4577					4582					4587					4592	
aag	ggc	ttc	gag	ttc	tcg	gtg	ccc	ttc	acg	gaa	atg	aag	ctg	aga	cca	13824
Lys	Gly	Phe	Glu	Phe	Ser	Val	Pro	Phe	Thr	Glu	Met	Lys	Leu	Arg	Pro	
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aga	aac	ttt	cgc	tcc	cca	gcg	ggg	gga	ggc	tga						13857
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Met Ala Glu Ala Ala Ala Leu Val Trp Ile Arg Gly Pro Gly Phe Gly															
1 5 10 15															
tgc aag gcg gtg cgg tgt gcc tcg ggt cgg tgc acc gtc cgg gat ttt															156
Cys Lys Ala Val Arg Cys Ala Ser Gly Arg Cys Thr Val Arg Asp Phe															

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atc cac cgg cac tgc caa gat cag aat gtt cca gtg gaa aac ttc ttt				204
Ile His Arg His Cys Gln Asp Gln Asn Val Pro Val Glu Asn Phe Phe				
33	38	43	48	
gtg aaa tgc aat gga gca ctc att aac acc agt gac aca gtg cag cat				252
Val Lys Cys Asn Gly Ala Leu Ile Asn Thr Ser Asp Thr Val Gln His				
49	54	59	64	
gga gct gtt tat agt ttg gaa ccc aga ctt tgc ggt gga aaa gga ggt				300
Gly Ala Val Tyr Ser Leu Glu Pro Arg Leu Cys Gly Gly Lys Gly Gly				
65	70	75	80	
ttt gga tct atg ctc cga gca ctt ggt gct cag att gag aag aca acc				348
Phe Gly Ser Met Leu Arg Ala Leu Gly Ala Gln Ile Glu Lys Thr Thr				
81	86	91	96	
aat cga gaa gct tgt cgg gat ctc agt gga agg aga cta cgc gat gtc				396
Asn Arg Glu Ala Cys Arg Asp Leu Ser Gly Arg Arg Leu Arg Asp Val				
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aat cat gaa aaa gca atg gct gaa tgg gta aaa caa caa gcc gag cga				444
Asn His Glu Lys Ala Met Ala Glu Trp Val Lys Gln Gln Ala Glu Arg				
113	118	123	128	
gag gct gaa aag gag cag aag cgg ctg gag cga ctg cag cgg aag ctt				492
Glu Ala Glu Lys Glu Gln Lys Arg Leu Glu Arg Leu Gln Arg Lys Leu				
129	134	139	144	
gta gaa ccc aag cac tgc ttc acc agc ccc gac tac cag cag cag tgc				540
Val Glu Pro Lys His Cys Phe Thr Ser Pro Asp Tyr Gln Gln Gln Cys				
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cat gag atg gct gag cgt ctg gag gat tcc gtc ctc aaa ggt atg cag				588
His Glu Met Ala Glu Arg Leu Glu Asp Ser Val Leu Lys Gly Met Gln				
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gct gcc tcc agc aag atg gtt tca gca gaa atc agt gag aat cgg aaa				636
Ala Ala Ser Ser Lys Met Val Ser Ala Glu Ile Ser Glu Asn Arg Lys				
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cgg caa tgg cct act aaa tct caa aca gac aga gga gcc agt gcg gga				684
Arg Gln Trp Pro Thr Lys Ser Gln Thr Asp Arg Gly Ala Ser Ala Gly				
193	198	203	208	
aag agg aga tgc ttc tgg ttg ggc atg gag gga cta gag act gca gaa				732
Lys Arg Arg Cys Phe Trp Leu Gly Met Glu Gly Leu Glu Thr Ala Glu				
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Gly Ser Asn Ser Glu Ser Ser Asp Asp Asp Ser Glu Glu Ala Pro Ser				
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act tca gga atg ggt ttc cat gct cca aaa att ggt agc aat ggt gtc				828
Thr Ser Gly Met Gly Phe His Ala Pro Lys Ile Gly Ser Asn Gly Val				
241	246	251	256	

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gct gga ctg aat aag gat aaa gag aca gaa gaa agg act gat ggg gaa Ala Gly Leu Asn Lys Asp Lys Glu Thr Glu Glu Arg Thr Asp Gly Glu 337 342 347 352	1116
aga gtt gct gag gta gca cct gaa gaa agg gaa aac gtt gcc gtt gcc Arg Val Ala Glu Val Ala Pro Glu Glu Arg Glu Asn Val Ala Val Ala 353 358 363 368	1164
aaa ctg cag gaa agc cag cca gga aac gca gtt att gat aag gaa act Lys Leu Gln Glu Ser Gln Pro Gly Asn Ala Val Ile Asp Lys Glu Thr 369 374 379 384	1212
ata gat tta ttg gcg ttc acc tct gtt gca gaa ctg gag ttg ctg ggt Ile Asp Leu Leu Ala Phe Thr Ser Val Ala Glu Leu Glu Leu Leu Gly 385 390 395 400	1260
ttg gag aag ctc aaa tgt gaa ctg atg gcc ctt gga ctg aaa tgt ggg Leu Glu Lys Leu Lys Cys Glu Leu Met Ala Leu Gly Leu Lys Cys Gly 401 406 411 416	1308
ggc act ctg cag aag cgg ccg ctc tag aggat ccaagcttac gtacgcgtgc Gly Thr Leu Gln Lys Arg Pro Leu * 417 422	1360
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	Met Leu
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aag aga aag cca tcc aat gtt tca gag aag gag aaa cat caa aaa cca	165
Lys Arg Lys Lys Pro Ser Asn Val Ser Glu Lys Glu Lys His Gln Lys Pro	
3 8 13 18	
aag cga agc agc agt ttt ggg aat ttc gat cgt ttt cgg aat aat tct	213
Lys Arg Ser Ser Ser Phe Gly Asn Phe Asp Arg Phe Arg Asn Asn Ser	
19 24 29 34	
tta tca aaa cca gat gat tca act gag gca cat gaa gga gat ccc aca	261
Leu Ser Lys Pro Asp Asp Ser Thr Glu Ala His Glu Gly Asp Pro Thr	
35 40 45 50	
aat gga agt gga gaa caa agt aaa act tca aat aat gga ggc ggt ttg	309
Asn Gly Ser Gly Glu Gln Ser Lys Thr Ser Asn Asn Gly Gly Gly Leu	
51 56 61 66	
ggt aaa aaa atg aga gct att tca tgg aca atg aag aaa aaa gtg ggt	357
Gly Lys Lys Met Arg Ala Ile Ser Trp Thr Met Lys Lys Lys Val Gly	
67 72 77 82	
aaa aag tac atc aaa gcc ctt tct gag gaa aag gat gag gaa gat gga	405
Lys Lys Tyr Ile Lys Ala Leu Ser Glu Glu Lys Asp Glu Glu Asp Gly	
83 88 93 98	
gag aat gcc cac cca tat aga aac agt gac cct gtg att ggg acc cac	453
Glu Asn Ala His Pro Tyr Arg Asn Ser Asp Pro Val Ile Gly Thr His	
99 104 109 114	
aca gag aag gtg tcc ctc aaa gcc agt gac tcc atg gat agt ctc tac	501
Thr Glu Lys Val Ser Leu Lys Ala Ser Asp Ser Met Asp Ser Leu Tyr	
115 120 125 130	
agt gga cag agc tca tca agt ggc ata aca agc tgt tca gat ggt aca	549
Ser Gly Gln Ser Ser Ser Ser Gly Ile Thr Ser Cys Ser Asp Gly Thr	
131 136 141 146	
agt aac cgg gac agc ttt cga ctg gat gac gat ggc ccc tat tca gga	597
Ser Asn Arg Asp Ser Phe Arg Leu Asp Asp Asp Gly Pro Tyr Ser Gly	
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Pro Phe Cys Gly Arg Ala Arg Val His Thr Asp Phe Thr Pro Ser Pro	
163 168 173 178	
tat gac act gac tcc ctc aaa atc aag aaa gga gac atc ata gac att	693
Tyr Asp Thr Asp Ser Leu Lys Ile Lys Lys Gly Asp Ile Ile Asp Ile	
179 184 189 194	



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gat ata aaa gag agt cac ctc att gaa tta aat att gaa aac cca gat Asp Ile Lys Glu Ser His Leu Ile Glu Leu Asn Ile Glu Asn Pro Asp 275 280 285 290	981
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ggg tgc tat atc tca tca gga aat tca gat aat ggc aaa gag gat ctg Gly Cys Tyr Ile Ser Ser Gly Asn Ser Asp Asn Gly Lys Glu Asp Leu 339 344 349 354	1173
gag tct gaa aat ctg tct gac atg gta cat aag att att atc aca gag Glu Ser Glu Asn Leu Ser Asp Met Val His Lys Ile Ile Ile Thr Glu 355 360 365 370	1221
cca agt gac tga aca cgcattccca actatatatc tacagatgca ttccatttta Pro Ser Asp * 371	1276
actcttcttg agctaaaacg tcaaatagga gaggaagata agataaatat ttgtaaataa	1336
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ttccaaatta ctgtcaataa aatatatatt tattatttta aatgctatgt gttaatat	1456
cácttgcttg tattagaaag gcaaaatgta agactttggg atgtgtgaca tatgctttat	1516
ttggctttat tttaacaagta cagtatctgc aaaaaacaaa gtaacctttt ttcataacctg	1576

ccagttttga atttatatat gttattgaac aaatagtaat agaggattcg ctgttgaaac 1636  
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tgcactcaca gggaggagga ggcggcagcg gcggaggaag gggcgccacc ccgagaggtg 180  
gattgtctca ttgtagtg cgaatcttct tgcctacttg tatctgggaa tttactttg 240  
aagaggaaga gagtgaatat gaataactga aaaataaaat ggc atg ccc aaa gaa 295  
Met Pro Lys Glu  
1

aaa tac gag ccc cct gac cct cgg agg atg tat aca att atg tct tct 343  
Lys Tyr Glu Pro Pro Asp Pro Arg Arg Met Tyr Thr Ile Met Ser Ser  
5 10 15 20

gag gaa gca gca aat gga aag aaa tcc cac tgg gca gag ctt gaa ata 391  
Glu Glu Ala Ala Asn Gly Lys Lys Ser His Trp Ala Glu Leu Glu Ile  
21 26 31 36

agt gga aaa gta aga agc tta agc gca tct ttg tgg tca cta act cac 439  
Ser Gly Lys Val Arg Ser Leu Ser Ala Ser Leu Trp Ser Leu Thr His  
37 42 47 52

ctg aca gct ttg cat ttg agt gac aat tcc ctg tcc cga att cct tca 487  
Leu Thr Ala Leu His Leu Ser Asp Asn Ser Leu Ser Arg Ile Pro Ser  
53 58 63 68

gac att gcc aag ctt cac aat ctg gtg tat ttg gac ctg tca tct aat 535  
Asp Ile Ala Lys Leu His Asn Leu Val Tyr Leu Asp Leu Ser Ser Asn  
69 74 79 84

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Lys Ile Arg Ser Leu Pro Ala Glu Leu Gly Asn Met Val Ser Leu Arg	
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Glu Leu His Leu Asn Asn Asn Leu Leu Arg Val Leu Pro Phe Glu Leu	
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Gly Lys Leu Phe Gln Leu Gln Thr Leu Gly Leu Lys Gly Asn Pro Leu	
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133 138 143 148	
ctg ctg aac tat ttg ctt ggt aat ttg tca ggt act gca aaa aga att	775
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Asp Arg Thr Arg Pro Thr Ala Leu Phe Ser Val Met Cys Tyr Asn Val	
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ctt tgt gat aaa tat gcg acc cgg cag tta tac ggc tac tgt cca tca	919
Leu Cys Asp Lys Tyr Ala Thr Arg Gln Leu Tyr Gly Tyr Cys Pro Ser	
197 202 207 212	
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Trp Ala Leu Asn Trp Asp Tyr Arg Lys Lys Ala Ile Ile Gln Glu Ile	
213 218 223 228	
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Leu Ser Cys Asn Ala Asp Ile Val Ser Leu Gln Glu Val Glu Thr Glu	
229 234 239 244	
cag tat tac agt ttt ttt ctg gta gag ctg aaa gaa cgt ggc tat aat	1063
Gln Tyr Tyr Ser Phe Phe Leu Val Glu Leu Lys Glu Arg Gly Tyr Asn	
245 250 255 260	
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Gly Phe Phe Ser Pro Lys Ser Arg Ala Arg Thr Met Ser Glu Gln Glu	
261 266 271 276	
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Arg Lys His Val Asp Gly Cys Ala Ile Phe Phe Lys Thr Glu Lys Phe	
277 282 287 292	
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Thr Leu Val Gln Lys His Thr Val Glu Phe Asn Gln Leu Ala Met Ala	
293 298 303 308	

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325 330 335 340	
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Val Ala Asn Ala His Met His Trp Asp Pro Glu Tyr Ser Asp Val Lys	
357 362 367 372	
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Leu Val Gln Thr Met Met Phe Leu Ser Glu Val Lys Asn Ile Ile Asp	
373 378 383 388	
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Lys Ala Ser Arg Asn Leu Lys Ser Ser Val Leu Gly Glu Phe Gly Thr	
389 394 399 404	
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405 410 415 420	
gtt gta gaa tat ttg agc aca ggt gga gta gaa aca aat cac aaa gac	1591
Val Val Glu Tyr Leu Ser Thr Gly Gly Val Glu Thr Asn His Lys Asp	
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Phe Lys Glu Leu Arg Tyr Asn Glu Ser Leu Thr Asn Phe Ser Cys His	
437 442 447 452	
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Gly Lys Asn Gly Thr Thr Asn Gly Arg Ile Thr His Gly Phe Lys Leu	
453 458 463 468	
cag agt gcc tat gag agt ggc ctg atg cct tac acg aat tac aca ttt	1735
Gln Ser Ala Tyr Glu Ser Gly Leu Met Pro Tyr Thr Asn Tyr Thr Phe	
469 474 479 484	
gat ttc aag ggt ata ata gac tac att ttc tat tct aaa cct cag ctg	1783
Asp Phe Lys Gly Ile Ile Asp Tyr Ile Phe Tyr Ser Lys Pro Gln Leu	
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Asn Asn Ile Ser Gly Cys Pro His Pro Leu Ile Pro Ser Asp His Phe	
517 522 527 532	
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Ser Leu Phe Ala Gln Leu Glu Leu Leu Leu Pro Phe Leu Pro Gln Val  
533 538 543 548

aac ggc atc cac ctt cct ggc agg agg tag t caagcacctt cagaggacag 1978  
Asn Gly Ile His Leu Pro Gly Arg Arg \*  
549 554

ccttgattca cttgtaaact tgtgaaaatc tgaacatagg ggagtgaggt atggccactg 2038

aggatttttg cttgcttaag aatgatttgg actttcaatc tgattatttg ataaggatat 2098

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agacagggat tgggtgtgttt g 2179

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<222> (46) .. (1686)

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Ala Arg Leu Asp Tyr Glu Leu Ile Gln Arg Phe Thr Leu Thr Ile Ile  
4 9 14 19

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Ala Arg Asp Gly Gly Gly Glu Glu Thr Thr Gly Arg Val Arg Ile Asn  
20 25 30 35

gtg ttg gat gtc aac gac aac gtg ccc acc ttc cag aag gat gcc tac 198  
Val Leu Asp Val Asn Asp Asn Val Pro Thr Phe Gln Lys Asp Ala Tyr  
36 41 46 51

gtg ggt gct ctg cgg gag aac gag cct tct gtc aca cag ctg gtg cgg 246  
Val Gly Ala Leu Arg Glu Asn Glu Pro Ser Val Thr Gln Leu Val Arg  
52 57 62 67

ctc cgg gca aca gat gaa gac tcc cct ccc aac aac cag atc acc tac 294  
Leu Arg Ala Thr Asp Glu Asp Ser Pro Pro Asn Asn Gln Ile Thr Tyr  
68 73 78 83

agc att gtc agt gca tct gcc ttt ggc agc tac ttc gac atc agc ctg 342  
Ser Ile Val Ser Ala Ser Ala Phe Gly Ser Tyr Phe Asp Ile Ser Leu  
84 89 94 99

tac gag ggc tat gga gtg atc agc gtc agt cgc ccc ctg gat tat gaa 390

Tyr Glu Gly Tyr Gly Val Ile Ser Val Ser Arg Pro Leu Asp Tyr Glu	
100 105 110 115	
cag ata tcc aat ggg ctg att tat ctg acg gtc atg gcc atg gat gct	438
Gln Ile Ser Asn Gly Leu Ile Tyr Leu Thr Val Met Ala Met Asp Ala	
116 121 126 131	
ggc aac ccc cct ctc aac agc acc gtc cct gtc acc atc gag gtg ttt	486
Gly Asn Pro Pro Leu Asn Ser Thr Val Pro Val Thr Ile Glu Val Phe	
132 137 142 147	
gat gag aat gac gac cct ccc acc ttc agc aag ccc gcc tac ttc gtc	534
Asp Glu Asn Asp Asp Pro Pro Thr Phe Ser Lys Pro Ala Tyr Phe Val	
148 153 158 163	
tcc gtg gtg gag aac atc atg gca gga gcc acg gtg ctg ttc ctg aat	582
Ser Val Val Glu Asn Ile Met Ala Gly Ala Thr Val Leu Phe Leu Asn	
164 169 174 179	
gcc aca gac ctg gac cgc tcc cgg gag tac ggc cag gag tcc atc atc	630
Ala Thr Asp Leu Asp Arg Ser Arg Glu Tyr Gly Gln Glu Ser Ile Ile	
180 185 190 195	
tac tcc ttg gaa ggc tcc acc cag ttt cgg atc aat gcc cgc tca ggg	678
Tyr Ser Leu Glu Gly Ser Thr Gln Phe Arg Ile Asn Ala Arg Ser Gly	
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gaa atc acc acc acg tct ctg ctt gac cga gag acc aag tct gaa tac	726
Glu Ile Thr Thr Thr Ser Leu Leu Asp Arg Glu Thr Lys Ser Glu Tyr	
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Ile Leu Ile Val Arg Ala Val Asp Gly Gly Val Gly His Asn Gln Lys	
228 233 238 243	
act ggc atc gcc acc gta aac atc acc ctc ctg gac atc aac gac aac	822
Thr Gly Ile Ala Thr Val Asn Ile Thr Leu Leu Asp Ile Asn Asp Asn	
244 249 254 259	
cac ccc acg tgg aag gac gca ccc tac tac atc aac ctg gtg gag atg	870
His Pro Thr Trp Lys Asp Ala Pro Tyr Tyr Ile Asn Leu Val Glu Met	
260 265 270 275	
acc cct cca gac tct gac gtg acc acg gtg gtg gct gtt gac cca gac	918
Thr Pro Pro Asp Ser Asp Val Thr Thr Val Val Ala Val Asp Pro Asp	
276 281 286 291	
ctg ggg gag aat ggc acc ctg gtg tac agc atc cag cca ccc aac aag	966
Leu Gly Glu Asn Gly Thr Leu Val Tyr Ser Ile Gln Pro Pro Asn Lys	
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ttc tac agc ctc aac agc acc acg ggc aag atc cgc acc acc cac gcc	1014
Phe Tyr Ser Leu Asn Ser Thr Thr Gly Lys Ile Arg Thr Thr His Ala	
308 313 318 323	
atg ctg gac cgg gag aac ccc gac ccc cat gag gcc gag ctg atg cgc	1062
Met Leu Asp Arg Glu Asn Pro Asp Pro His Glu Ala Glu Leu Met Arg	

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Lys Ile Val Val Ser Val Thr Asp Cys Gly Arg Pro Pro Leu Lys Ala				
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acc agc agt gcc aca gtg ttt gtg aac ctc ttg gat ctc aat gac aat				1158
Thr Ser Ser Ala Thr Val Phe Val Asn Leu Leu Asp Leu Asn Asp Asn				
356	361	366	371	
gac ccc acc ttt cag aac ctg cct ttt gtg gcc gag gtg ctt gaa gcc				1206
Asp Pro Thr Phe Gln Asn Leu Pro Phe Val Ala Glu Val Leu Glu Gly				
372	377	382	387	
atc ccg gcg ggg gtc tcc atc tac caa gtg gtg gcc atc gac ctc gat				1254
Ile Pro Ala Gly Val Ser Ile Tyr Gln Val Val Ala Ile Asp Leu Asp				
388	393	398	403	
gag gcc ctg aac gcc ctg gtg tcc tac cgc atg ccg gtg gcc atg ccc				1302
Glu Gly Leu Asn Gly Leu Val Ser Tyr Arg Met Pro Val Gly Met Pro				
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cgc atg gac ttc ctc atc aac agc agc agc gcc gtg gtg gtc acc acc				1350
Arg Met Asp Phe Leu Ile Asn Ser Ser Ser Gly Val Val Val Thr Thr				
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acc gag ctg gac cgc gag cgc atc gcg gag tac cag ctg cgg gtg gtg				1398
Thr Glu Leu Asp Arg Glu Arg Ile Ala Glu Tyr Gln Leu Arg Val Val				
436	441	446	451	
gcc agt gat gca gcc acg ccc acc aag agc tcc acc agc acg ctc acc				1446
Ala Ser Asp Ala Gly Thr Pro Thr Lys Ser Ser Thr Ser Thr Leu Thr				
452	457	462	467	
atc cat gtg ctg gat gtg aac gac gag acg ccc acc ttc ttc ccg gcc				1494
Ile His Val Leu Asp Val Asn Asp Glu Thr Pro Thr Phe Phe Pro Ala				
468	473	478	483	
gtg tac aat gtg tct gtg tcc gag gac gtg cca cgc gag ttc cgg gtg				1542
Val Tyr Asn Val Ser Val Ser Glu Asp Val Pro Arg Glu Phe Arg Val				
484	489	494	499	
gtc tgg ctg aac tgc acg gac aac gac gtg gcc ctc aat gca gag ctc				1590
Val Trp Leu Asn Cys Thr Asp Asn Asp Val Gly Leu Asn Ala Glu Leu				
500	505	510	515	
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Ser Tyr Phe Ile Thr Gly Ala Ala Pro Ala Ser Thr His Leu Cys Arg				
516	521	526	531	
cct cct ggg gcc ctg cct cca ccc ctc cca gat gga cag cca gac tag				1686
Pro Pro Gly Ala Leu Pro Pro Pro Leu Pro Asp Gly Gln Pro Asp *				
532	537	542	547	
gtgggggcag gtgaggggtgg aaaagaggtc agggctctac tgttgggctt tagcctctgg				1746
tggtgcctcc cgaggatttg ctccctggctc ttcccaaggg ctttgcagct ggatcactct				1806

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 Trp Phe Gly Ser Ser Gln Arg Pro Ile Asp Arg Gln Arg Tyr Asp Glu  
 6 11 16 21  
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 Asn Glu Asp Leu Ser Asp Val Glu Glu Ile Val Ser Val Arg Gly Phe  
 22 27 32 37  
 agc ctg gag gag aag ctt cgc agc cag ctg tac cag ggg gac ttc gtg 557  
 Ser Leu Glu Glu Lys Leu Arg Ser Gln Leu Tyr Gln Gly Asp Phe Val  
 38 43 48 53  
 cac gcc atg gag ggc aaa gat ttc aac tat gag tac gta cag aga gaa 605  
 His Ala Met Glu Gly Lys Asp Phe Asn Tyr Glu Tyr Val Gln Arg Glu  
 54 59 64 69  
 gct ctc agg gtt ccc ctg ata ttt cga gaa aag gat gga ctg gga att 653



Ala	Leu	Arg	Val	Pro	Leu	Ile	Phe	Arg	Glu	Lys	Asp	Gly	Leu	Gly	Ile		
70					75					80					85		
aag	atg	cct	gac	cct	gat	ttc	aca	gtc	cga	gac	gtc	aaa	ctc	cta	gtg	701	
Lys	Met	Pro	Asp	Pro	Asp	Phe	Thr	Val	Arg	Asp	Val	Lys	Leu	Leu	Val		
86					91					96					101		
ggg	agc	cgg	cgg	ctt	gtg	gac	gtg	atg	gat	gtg	aac	acc	cag	aag	ggc	749	
Gly	Ser	Arg	Arg	Leu	Val	Asp	Val	Met	Asp	Val	Asn	Thr	Gln	Lys	Gly		
102					107					112					117		
acg	gag	atg	agc	atg	tcc	cag	ttt	gtg	cgt	tac	tac	gag	acg	ccc	gag	797	
Thr	Glu	Met	Ser	Met	Ser	Gln	Phe	Val	Arg	Tyr	Tyr	Glu	Thr	Pro	Glu		
118					123					128					133		
gcc	cag	cgg	gac	aag	ctg	tac	aac	gtc	atc	agc	cta	gag	ttc	agc	cac	845	
Ala	Gln	Arg	Asp	Lys	Leu	Tyr	Asn	Val	Ile	Ser	Leu	Glu	Phe	Ser	His		
134					139					144					149		
acc	aag	ctg	gag	cac	ttg	gtc	aag	cgt	ccg	act	gtg	gta	gac	ctg	gtg	893	
Thr	Lys	Leu	Glu	His	Leu	Val	Lys	Arg	Pro	Thr	Val	Val	Asp	Leu	Val		
150					155					160					165		
gac	tgg	gtg	gac	aac	atg	tgg	ccc	cag	cat	ctg	aag	gag	aag	cag	aca	941	
Asp	Trp	Val	Asp	Asn	Met	Trp	Pro	Gln	His	Leu	Lys	Glu	Lys	Gln	Thr		
166					171					176					181		
gaa	gcc	acg	aac	gcc	att	gca	gag	atg	aag	tac	ccg	aaa	gtg	aaa	aag	989	
Glu	Ala	Thr	Asn	Ala	Ile	Ala	Glu	Met	Lys	Tyr	Pro	Lys	Val	Lys	Lys		
182					187					192					197		
tac	tgt	ctg	atg	agc	gtg	aaa	ggg	tgt	ttc	acc	gac	ttc	cac	atc	gac	1037	
Tyr	Cys	Leu	Met	Ser	Val	Lys	Gly	Cys	Phe	Thr	Asp	Phe	His	Ile	Asp		
198					203					208					213		
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Phe	Gly	Gly	Thr	Ser	Val	Trp	Tyr	His	Val	Phe	Arg	Gly	Gly	Lys	Ile		
214					219					224					229		
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Phe	Trp	Leu	Ile	Pro	Pro	Thr	Leu	His	Asn	Leu	Ala	Leu	Tyr	Glu	Glu		
230					235					240					245		
tgg	gtg	ctg	tca	ggc	aaa	cag	agt	gac	atc	ttt	ctg	gga	gac	cgt	gtg	1181	
Trp	Val	Leu	Ser	Gly	Lys	Gln	Ser	Asp	Ile	Phe	Leu	Gly	Asp	Arg	Val		
246					251					256					261		
gaa	cga	tgc	caa	aga	att	gag	ctg	aag	cag	ggc	tac	aca	ttt	ttc	atc	1229	
Glu	Arg	Cys	Gln	Arg	Ile	Glu	Leu	Lys	Gln	Gly	Tyr	Thr	Phe	Phe	Ile		
262					267					272					277		
cct	tcc	ggg	tgg	atc	cat	gcc	gtc	tac	acc	cct	gta	gac	tct	ttg	gtg	1277	
Pro	Ser	Gly	Trp	Ile	His	Ala	Val	Tyr	Thr	Pro	Val	Asp	Ser	Leu	Val		
278					283					288					293		
ttc	ggc	gga	aac	atc	ctg	cac	agc	ttt	aac	gtg	ccc	atg	cag	ctg	cgg	1325	
Phe	Gly	Gly	Asn	Ile	Leu	His	Ser	Phe	Asn	Val	Pro	Met	Gln	Leu	Arg		

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atc tac gag atc gag gac agg acg cgg gtg cag ccc aaa ttc cgt tac				1373
Ile Tyr Glu Ile Glu Asp Arg Thr Arg Val Gln Pro Lys Phe Arg Tyr				
310	315	320	325	
ccc ttc tac tat gag atg tgc tgg tat gtc ctg gag aga tac gtg tac				1421
Pro Phe Tyr Tyr Glu Met Cys Trp Tyr Val Leu Glu Arg Tyr Val Tyr				
326	331	336	341	
tgt gtg acc cag cgc tcc cac ctc act cag gaa tac cag agg gag tgc				1469
Cys Val Thr Gln Arg Ser His Leu Thr Gln Glu Tyr Gln Arg Glu Ser				
342	347	352	357	
atg ctt att gat gcc ccg agg aag ccc agc ata gac ggc ttc tct tgc				1517
Met Leu Ile Asp Ala Pro Arg Lys Pro Ser Ile Asp Gly Phe Ser Ser				
358	363	368	373	
gat tcc tgg ctg gag atg gag gag gag gcc tgt gat cag cag cct cag				1565
Asp Ser Trp Leu Glu Met Glu Glu Glu Ala Cys Asp Gln Gln Pro Gln				
374	379	384	389	
gag gag gag gag aag gac gag gag ggc gag ggc agg gac agg gca ccc				1613
Glu Glu Glu Glu Lys Asp Glu Glu Gly Glu Gly Arg Asp Arg Ala Pro				
390	395	400	405	
aaa ccg ccc acc gat ggc tcc act tca ccc acc agc acg ccc tct gag				1661
Lys Pro Pro Thr Asp Gly Ser Thr Ser Pro Thr Ser Thr Pro Ser Glu				
406	411	416	421	
gac cag gag gcc ctc ggg aag aag ccc aaa gca cct gcc ctg cga ttc				1709
Asp Gln Glu Ala Leu Gly Lys Lys Pro Lys Ala Pro Ala Leu Arg Phe				
422	427	432	437	
ctc aaa agg act ttg tct aat gag tgc gag gaa agt gtg aag tcc acc				1757
Leu Lys Arg Thr Leu Ser Asn Glu Ser Glu Glu Ser Val Lys Ser Thr				
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aca ttg gcc gta gac tac ccc aag acc ccc acc ggc tct ccc gcc acg				1805
Thr Leu Ala Val Asp Tyr Pro Lys Thr Pro Thr Gly Ser Pro Ala Thr				
454	459	464	469	
gag gtc tct gcc aaa tgg acc cat ctc act gag ttt gaa ctg aag ggc				1853
Glu Val Ser Ala Lys Trp Thr His Leu Thr Glu Phe Glu Leu Lys Gly				
470	475	480	485	
ctg aaa gct ctg gtg gag aaa ctg gaa tcc ctc ccg gag aac aag aag				1901
Leu Lys Ala Leu Val Glu Lys Leu Glu Ser Leu Pro Glu Asn Lys Lys				
486	491	496	501	
tgt gtc ccc gag ggc atc gag gac ccc cag gca ctc ctg gag ggt gtg				1949
Cys Val Pro Glu Gly Ile Glu Asp Pro Gln Ala Leu Leu Glu Gly Val				
502	507	512	517	
aag aac gtc ctg aag gag cac gca gat gat gac cct agt ctg gcc atc				1997
Lys Asn Val Leu Lys Glu His Ala Asp Asp Asp Pro Ser Leu Ala Ile				
518	523	528	533	

act ggg gtc cct gtg gtg act tgg cca aag aag act cca aag aac cgg	2045
Thr Gly Val Pro Val Val Thr Trp Pro Lys Lys Thr Pro Lys Asn Arg	
534 539 544 549	
gct gtg ggt cgg ccc aag ggg aag ctg ggc ccg gcc tcc gcg gtg aag	2093
Ala Val Gly Arg Pro Lys Gly Lys Leu Gly Pro Ala Ser Ala Val Lys	
550 555 560 565	
ttg gcc gcc aac cgg aca acg gca gga gct cgg cgg cgc cgg acg cga	2141
Leu Ala Ala Asn Arg Thr Thr Ala Gly Ala Arg Arg Arg Arg Thr Arg	
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tgc cgc aag tgc gag gcc tgc ctg cgg acc gag tgc gga gag tgc cac	2189
Cys Arg Lys Cys Glu Ala Cys Leu Arg Thr Glu Cys Gly Glu Cys His	
582 587 592 597	
ttc tgc aag gac atg aag aag ttc ggg ggc ccc ggg cgc atg aag cag	2237
Phe Cys Lys Asp Met Lys Lys Phe Gly Gly Pro Gly Arg Met Lys Gln	
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agc tgc atc atg cgg cag tgc atc gcg cca gtg ctg ccc cac acc gcc	2285
Ser Cys Ile Met Arg Gln Cys Ile Ala Pro Val Leu Pro His Thr Ala	
614 619 624 629	
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Val Cys Leu Val Cys Gly Glu Ala Gly Lys Glu Asp Thr Val Glu Glu	
630 635 640 645	
gag gaa ggc aag ttt aac ctc atg ctc atg gag tgc tcc atc tgc aat	2381
Glu Glu Gly Lys Phe Asn Leu Met Leu Met Glu Cys Ser Ile Cys Asn	
646 651 656 661	
gaa atc atc cac cct gga tgc ctt aag gtg agt ggc cca gtg ggg aca	2429
Glu Ile Ile His Pro Gly Cys Leu Lys Val Ser Gly Pro Val Gly Thr	
662 667 672 677	
ggg ggt gct gac gct ctg ggg cag gta ggg ttg ctg gag atg ctg gtg	2477
Gly Gly Ala Asp Ala Leu Gly Gln Val Gly Leu Leu Glu Met Leu Val	
678 683 688 693	
aga tgg tgg gat gca ggt cgt gca gtg aat tcc tgg agg acc cct gag	2525
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Met Asn Asn Ser	
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acc acc acc act agt agc agc aac tcc aag gat tgt gga ggt ccg gcc	164
Thr Thr Thr Thr Ser Ser Asn Ser Lys Asp Cys Gly Gly Pro Ala	
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Ser Ser Gly Ala Gly Ala Thr Ala Ala Leu Ala Asp Gly Leu Lys Phe	
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Ala Ser Val Gln Ala Ser Ala Pro Gln Gly Asn Ser His Lys Glu Thr	
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Ser Lys Ser Lys Val Lys Arg Ser Lys Thr Ser Lys Asp Ala Asn Lys	
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Ser Leu Pro Ser Ala Ala Leu Tyr Gly Ile Pro Glu Ile Ser Ser Thr	
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Gly Lys Arg Gln Glu Val Gln Gly Arg Pro Gly Glu Ala Thr Gly Met	
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Asn Ser Ala Leu Gly Gln Ser Val Ser Ser Gly Gly Ser Gly Asn Pro	
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Asn Ser Asn Ser Thr Ser Thr Ser Thr Ser Ala Ala Thr Ala Gly Ala	
117 122 127 132	
ggc tcc tgt ggg aaa agc aaa gag gag aag cca ggt aaa agc cag agc	548
Gly Ser Cys Gly Lys Ser Lys Glu Glu Lys Pro Gly Lys Ser Gln Ser	
133 138 143 148	
agc cga ggc gcc aag cgg gat aag gat gcg ggg aaa tcc agg aag gac	596
Ser Arg Gly Ala Lys Arg Asp Lys Asp Ala Gly Lys Ser Arg Lys Asp	
149 154 159 164	
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Lys His Asp Leu Leu Gln Gly His Gln Asn Gly Ser Gly Ser Gln Ala	
165 170 175 180	
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Pro Ser Gly Gly His Leu Tyr Gly Phe Gly Ala Lys Ser Asn Gly Gly	
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Ala Ala Gly Glu Val Ser Lys Ser Ala Pro Asp Ser Gly Leu Met Gly	
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aac tct atg ttg gta aag aag gaa gag gag gag gag gag agc cac agg	836
Asn Ser Met Leu Val Lys Lys Glu Glu Glu Glu Glu Glu Ser His Arg	
229 234 239 244	
cga atc aag aaa ctg aaa act gag aag gtt gac ccc ctg ttt aca gtg	884
Arg Ile Lys Lys Leu Lys Thr Glu Lys Val Asp Pro Leu Phe Thr Val	
245 250 255 260	
cca gcg cca cca ccg ccg att tcc agc agt ctc acg cct cag att cta	932
Pro Ala Pro Pro Pro Pro Ile Ser Ser Ser Leu Thr Pro Gln Ile Leu	
261 266 271 276	
ccc tcc tac ttt tcc cca tct tca tcc aat att gca gca ccg gtt gaa	980
Pro Ser Tyr Phe Ser Pro Ser Ser Ser Asn Ile Ala Ala Pro Val Glu	
277 282 287 292	
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Gln Leu Leu Val Arg Thr Arg Ser Val Gly Val Asn Thr Cys Glu Val	
293 298 303 308	
gga gta gtg aca gag cca gag tgt ctt ggg ccc tgt gaa cct ggg acc	1076
Gly Val Val Thr Glu Pro Glu Cys Leu Gly Pro Cys Glu Pro Gly Thr	
309 314 319 324	
agt gtg aat ttg gaa ggg atc gtg tgg cat gaa aca gaa gaa ggt gtc	1124
Ser Val Asn Leu Glu Gly Ile Val Trp His Glu Thr Glu Glu Gly Val	
325 330 335 340	
cta gtg gtc aat gtc acg tgg agg aac aaa acg tac gtg gga acc cta	1172
Leu Val Val Asn Val Thr Trp Arg Asn Lys Thr Tyr Val Gly Thr Leu	
341 346 351 356	
ctg gac tgc acc aag cac gac tgg gcc cct ccc agg ttt tgt gag tca	1220
Leu Asp Cys Thr Lys His Asp Trp Ala Pro Pro Arg Phe Cys Glu Ser	
357 362 367 372	
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Pro Thr Ser Asp Leu Glu Met Arg Gly Gly Arg Gly Arg Gly Lys Arg	
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Ala Arg Ser Ala Ala Ala Ala Pro Gly Ser Glu Ala Ser Phe Thr Glu	
389 394 399 404	
tcc aga ggg ctg cag aat aag aac aga ggg ggg gcc aat ggg aaa ggg	1364
Ser Arg Gly Leu Gln Asn Lys Asn Arg Gly Gly Ala Asn Gly Lys Gly	

405	410	415	420	
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Arg Arg Gly Ser Leu Asn Ala Ser Gly Arg Arg Thr Pro Pro Asn Cys				
421	426	431	436	
gct gct gag gat atc aaa gcc agc cct tcc tcc acc aaa aaa aaa aaa				1460
Ala Ala Glu Asp Ile Lys Ala Ser Pro Ser Ser Thr Lys Lys Lys Lys				
437	442	447	452	
aac aag cct cca atg gag ctg gac ctg aac tcc agc tct gag gac aat				1508
Asn Lys Pro Pro Met Glu Leu Asp Leu Asn Ser Ser Ser Glu Asp Asn				
453	458	463	468	
aag cct gga aag cgt gtc cgc aca aat tcc aga agc act ccc act acc				1556
Lys Pro Gly Lys Arg Val Arg Thr Asn Ser Arg Ser Thr Pro Thr Thr				
469	474	479	484	
cct caa ggg aaa cca gag act act ttt ttg gac caa ggc tgc tct tct				1604
Pro Gln Gly Lys Pro Glu Thr Thr Phe Leu Asp Gln Gly Cys Ser Ser				
485	490	495	500	
cca gtg tta atc gac tgt ccc cac cca aac tgc aac aaa aag tac aag				1652
Pro Val Leu Ile Asp Cys Pro His Pro Asn Cys Asn Lys Lys Tyr Lys				
501	506	511	516	
cac att aac ggc ctg agg tac cac cag gct cat gca cac tta gac cca				1700
His Ile Asn Gly Leu Arg Tyr His Gln Ala His Ala His Leu Asp Pro				
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gaa aac aag ctg gag ttc gag cct gac agt gag gac aag atc tcg gac				1748
Glu Asn Lys Leu Glu Phe Glu Pro Asp Ser Glu Asp Lys Ile Ser Asp				
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tgt gag gaa gga ttg agt aat gtg gca ctt gaa tgc agt gag cca agc				1796
Cys Glu Glu Gly Leu Ser Asn Val Ala Leu Glu Cys Ser Glu Pro Ser				
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aca agt gta tct gct tat gac cag ttg aag gca ccg gca tcc cct ggt				1844
Thr Ser Val Ser Ala Tyr Asp Gln Leu Lys Ala Pro Ala Ser Pro Gly				
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gct gga aac cca cct ggg acc cca aag gga aag aga gag ctg atg agc				1892
Ala Gly Asn Pro Pro Gly Thr Pro Lys Gly Lys Arg Glu Leu Met Ser				
581	586	591	596	
aat ggc cca ggt tcc att att ggt gct aaa gct ggg aag aat tct ggc				1940
Asn Gly Pro Gly Ser Ile Ile Gly Ala Lys Ala Gly Lys Asn Ser Gly				
597	602	607	612	
aaa aag aag ggc ctt aac aat gaa ctg aac aac ctt cca gta atc tcc				1988
Lys Lys Lys Gly Leu Asn Asn Glu Leu Asn Asn Leu Pro Val Ile Ser				
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aac atg acg gct gcg tta gac agt tgc tcg gca gca gac ggc agt ttg				2036
Asn Met Thr Ala Ala Leu Asp Ser Cys Ser Ala Ala Asp Gly Ser Leu				
629	634	639	644	

gct gct gag atg cct aaa ctg gaa gca gaa gga tta att gac aag aaa Ala Ala Glu Met Pro Lys Leu Glu Ala Glu Gly Leu Ile Asp Lys Lys 645 650 655 660	2084
aat tta gga gat aaa gaa aag ggc aaa aaa gct aac aac tgc aaa acg Asn Leu Gly Asp Lys Glu Lys Gly Lys Lys Ala Asn Asn Cys Lys Thr 661 666 671 676	2132
gac aaa aac ctc tct aaa ctg aaa agt gcc cgg ccc att gcc cct gcc Asp Lys Asn Leu Ser Lys Leu Lys Ser Ala Arg Pro Ile Ala Pro Ala 677 682 687 692	2180
cca gcc ccc act ccc ccg cag cta atc gct ata ccc act gca acc ttt Pro Ala Pro Thr Pro Pro Gln Leu Ile Ala Ile Pro Thr Ala Thr Phe 693 698 703 708	2228
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cca aag ccc aca att atg gga gag ccc atc acc gtg aac cca gct ctg Pro Lys Pro Thr Ile Met Gly Glu Pro Ile Thr Val Asn Pro Ala Leu 741 746 751 756	2372
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gag tct cag gag agc cgc atg gcc agt atc aaa gct gag gcc gat aag Glu Ser Gln Glu Ser Arg Met Ala Ser Ile Lys Ala Glu Ala Asp Lys 821 826 831 836	2612
gtt tac act ttc aca gac aac gct ccc agc cct tcc ata ggg agc gcc Val Tyr Thr Phe Thr Asp Asn Ala Pro Ser Pro Ser Ile Gly Ser Ala 837 842 847 852	2660
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ccc ctg cat gac ctt gtc ctc cac acc aac tac acc gcc aca gtg cgt	12864
Pro Leu His Asp Leu Val Leu His Thr Asn Tyr Thr Ala Thr Val Arg	
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Gly Leu Arg Gly Pro Asn Leu Thr Ser Pro Ala Ser Ile Thr Phe Thr	
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Thr Gly Leu Glu Ala Pro Arg Asp Leu Glu Ala Lys Glu Val Thr Pro	
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cgc acc gcc ctg ctc act tgg act gag ccc cca gtc cgg ccc gca ggc	13008
Arg Thr Ala Leu Leu Thr Trp Thr Glu Pro Pro Val Arg Pro Ala Gly	
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Tyr Leu Leu Ser Phe His Thr Pro Gly Gly Gln Asn Gln Glu Ile Leu	
4337 4342 4347 4352	
ctc cca gga ggg atc aca tct cac cag ctc qtt ggc ctc ttt ccc tcc	13104
Leu Pro Gly Gly Ile Thr Ser His Gln Leu Leu Gly Leu Phe Pro Ser	
4353 4358 4363 4368	
acc tcc tac aat gca cgg ctc cag gcc atg tgg ggc cag agc ctc ctg	13152
Thr Ser Tyr Asn Ala Arg Leu Gln Ala Met Trp Gly Gln Ser Leu Leu	
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Pro Pro Val Ser Thr Ser Phe Thr Thr Gly Gly Leu Arg Ile Pro Phe	
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Pro Arg Asp Cys Gly Glu Glu Met Gln Asn Gly Ala Gly Ala Ser Arg	
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Thr Ser Thr Ile Phe Leu Asn Gly Asn Arg Glu Arg Pro Leu Asn Val	
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Phe Cys Asp Met Glu Thr Asp Gly Gly Gly Trp Leu Val Phe Gln Arg	
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Arg Met Asp Gly Gln Thr Asp Phe Trp Arg Asp Trp Glu Asp Tyr Ala	
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cat ggt ttt ggg aac atc tct gga gag ttc tgg ctg ggc aat gag gcc	13440
His Gly Phe Gly Asn Ile Ser Gly Glu Phe Trp Leu Gly Asn Glu Ala	
4465 4470 4475 4480	
ctg cac agc ctg aca cag gca ggt gac tac tcc atg cgc qtg qac ctg	13488



Glu Thr Lys Gln Lys Asn Met Pro Ser Ala Thr Ile Ser Lys Ala Pro	
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Ser Thr Pro Glu Pro Asn Lys Asn His Ser Lys Leu Gly Pro Ser Val	
1109	1114 1119 1124
cct aat aaa act gag gag aca ggt aaa tcg cag ctt ctc tcc aat cac	3524
Pro Asn Lys Thr Glu Glu Thr Gly Lys Ser Gln Leu Leu Ser Asn His	
1125	1130 1135 1140
cag cag cag ctt cag gcc gac agc ttc aaa gct aag cag atg gaa aac	3572
Gln Gln Gln Leu Gln Ala Asp Ser Phe Lys Ala Lys Gln Met Glu Asn	
1141	1146 1151 1156
cac cag ctt att aag gag gct gta gaa atg aag tct gtc atg gac tct	3620
His Gln Leu Ile Lys Glu Ala Val Glu Met Lys Ser Val Met Asp Ser	
1157	1162 1167 1172
atg aag cag aca ggt gta gac cca acc tcg aga ttt aaa caa gac cca	3668
Met Lys Gln Thr Gly Val Asp Pro Thr Ser Arg Phe Lys Gln Asp Pro	
1173	1178 1183 1188
gat tca aga aca tgg cat cat tat gta tac cag ccc aaa tat ctg gat	3716
Asp Ser Arg Thr Trp His His Tyr Val Tyr Gln Pro Lys Tyr Leu Asp	
1189	1194 1199 1204
cag caa aag tca gaa gaa ctt gat aga gag aag aaa tta aaa gag gat	3764
Gln Gln Lys Ser Glu Glu Leu Asp Arg Glu Lys Lys Leu Lys Glu Asp	
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agt ccg agg aaa act cct aat aaa gag agt ggt gtg ccc agc ctt cct	3812
Ser Pro Arg Lys Thr Pro Asn Lys Glu Ser Gly Val Pro Ser Leu Pro	
1221	1226 1231 1236
gta tcg tta aca agc att aaa gag gag ccc aaa gag gcc aag cat cct	3860
Val Ser Leu Thr Ser Ile Lys Glu Glu Pro Lys Glu Ala Lys His Pro	
1237	1242 1247 1252
gat tct caa tca atg gag gag agc aag ctg aaa aat gat gat cga aag	3908
Asp Ser Gln Ser Met Glu Glu Ser Lys Leu Lys Asn Asp Asp Arg Lys	
1253	1258 1263 1268
act cct gtg aac tgg aag gac tct cgg gga aca aga gtg gct gtc tcc	3956
Thr Pro Val Asn Trp Lys Asp Ser Arg Gly Thr Arg Val Ala Val Ser	
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tca ccc atg agt cag cat cag tca tac ata cag tac ttg cat gct tat	4004
Ser Pro Met Ser Gln His Gln Ser Tyr Ile Gln Tyr Leu His Ala Tyr	
1285	1290 1295 1300
cct tac cca cag atg tac gac ccc agc cat cct gca tac cgg gct gtt	4052
Pro Tyr Pro Gln Met Tyr Asp Pro Ser His Pro Ala Tyr Arg Ala Val	
1301	1306 / 1311 1316
tct ccc gtc cta atg cac agt tat cct ggt acg tgt tgt cgg ttc tga	4100
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1317

1322

1327

1332

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 Met Glu Leu Ser Asp Val Thr  
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 ctc att gag ggt gtg ggt aat gag gtg atg gtg gtg gca ggt gtg gtg 582  
 Leu Ile Glu Gly Val Gly Asn Glu Val Met Val Val Ala Gly Val Val  
 8 13 18 23  
 gtg ctg att cta gcc ttg gtc cta gct tgg ctc tct acc tac gta gca 630  
 Val Leu Ile Leu Ala Leu Val Leu Ala Trp Leu Ser Thr Tyr Val Ala  
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 Asp Ser Gly Ser Asn Gln Leu Leu Gly Ala Ile Val Ser Ala Gly Asp  
 40 45 50 55  
 aca tcc gtc ctc cac ctg ggg cat gtg gac cac ctg gtg gca ggc caa 726  
 Thr Ser Val Leu His Leu Gly His Val Asp His Leu Val Ala Gly Gln  
 56 61 66 71  
 ggc aac ccc gag cca act gaa ctc ccc cat cca tca gag ggt aat gat 774  
 Gly Asn Pro Glu Pro Thr Glu Leu Pro His Pro Ser Glu Gly Asn Asp  
 72 / 77 82 87  
 gag aag gct gaa gag gcg ggt gaa ggt cgg gga gac tcc act ggg gag 822



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 Met Lys Arg Lys Arg Met Lys  
 1 5  
 gcc aac att aag ctg gtt ggt tca gga ttt ccc ctt ccc tcc tct gat 160  
 Ala Asn Ile Lys Leu Val Gly Ser Gly Phe Pro Leu Pro Ser Ser Asp  
 8 13 18 23  
 ttg gat gac tct ctc act gaa gag ata gat gaa aag att gga ttc cga 208  
 Leu Asp Asp Ser Leu Thr Glu Glu Ile Asp Glu Lys Ile Gly Phe Arg  
 24 29 34 39  
 aat gat gca aat ttt gac tgg caa aat gtg gca gat ttc agg gat gca 256  
 Asn Asp Ala Asn Phe Asp Trp Gln Asn Val Ala Asp Phe Arg Asp Ala

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Gly Gly Ser Leu Thr Glu Val Lys Val Glu Glu Glu Arg Asp Pro				
56	61	66	71	
cag agt cct gaa ttt gaa att gag gag gag gaa gaa atg ttg tca tcc				352
Gln Ser Pro Glu Phe Glu Ile Glu Glu Glu Glu Glu Met Leu Ser Ser				
72	77	82	87	
gtc ata cca gat tcc agg aga gaa aat gaa ctt ccc gat ttc ccc cac				400
Val Ile Pro Asp Ser Arg Arg Glu Asn Glu Leu Pro Asp Phe Pro His				
88	93	98	103	
att gat gag ttt ttt acc ctt aac tca aca cca tct aga tct gca tat				448
Ile Asp Glu Phe Phe Thr Leu Asn Ser Thr Pro Ser Arg Ser Ala Tyr				
104	109	114	119	
gat gag cct cat ttg ctc gta aat att gag aaa cag aaa cta gag ttg				496
Asp Glu Pro His Leu Leu Val Asn Ile Glu Lys Gln Lys Leu Glu Leu				
120	125	130	135	
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Glu Lys Arg Arg Leu Asp Ile Glu Ala Glu Arg Leu Gln Val Glu Lys				
136	141	146	151	
gaa cgc cta caa atc gag aaa gag agg ctg cgg cat tta gac atg gaa				592
Glu Arg Leu Gln Ile Glu Lys Glu Arg Leu Arg His Leu Asp Met Glu				
152	157	162	167	
cat gag cgg ctt cag cta gag aag gag cgg ctg cag att gaa aga gaa				640
His Glu Arg Leu Gln Leu Glu Lys Glu Arg Leu Gln Ile Glu Arg Glu				
168	173	178	183	
aag ttg agg tta cag ata gtc aat tca gag aaa ccg tcc ttg gaa aat				688
Lys Leu Arg Leu Gln Ile Val Asn Ser Glu Lys Pro Ser Leu Glu Asn				
184	189	194	199	
gaa ctt ggt caa gga gaa aaa tcc atg ctt caa cca cag gac ata gaa				736
Glu Leu Gly Gln Gly Glu Lys Ser Met Leu Gln Pro Gln Asp Ile Glu				
200	205	210	215	
aca gag aag tta aaa ctt gag cga gaa cgc ttg caa ctg gaa aag gat				784
Thr Glu Lys Leu Lys Leu Glu Arg Glu Arg Leu Gln Leu Glu Lys Asp				
216	221	226	231	
agg ctg cag ttt ttg aag ttt gaa tct gag aag ctg cag att gaa aag				832
Arg Leu Gln Phe Leu Lys Phe Glu Ser Glu Lys Leu Gln Ile Glu Lys				
232	237	242	247	
gaa cgc tta cag gta gag aaa gac aga ctt cga att cag aaa gaa gga				880
Glu Arg Leu Gln Val Glu Lys Asp Arg Leu Arg Ile Gln Lys Glu Gly				
248	253	258	263	
cac ttg cag tga ttt ttccaggctt ccatttagca aatgtttgaa aactctagat				935
His Leu Gln *				
264				

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gtc aag aga gcg aac tgc agc ctg gag cta cct ccg gcc agc ggt ccg      278
Val Lys Arg Ala Asn Cys Ser Leu Glu Leu Pro Pro Ala Ser Gly Pro
12                      17                      22                      27

gcc aag gac gct gag gag cct agt aat aaa cgg gtc aaa ccc ctt tcc      326
Ala Lys Asp Ala Glu Glu Pro Ser Asn Lys Arg Val Lys Pro Leu Ser
28                      33                      38                      43

cga gtc acg tcg cta gca aac ctc atc ccg ccc gtg aag gcc acg cca      374
Arg Val Thr Ser Leu Ala Asn Leu Ile Pro Pro Val Lys Ala Thr Pro
44                      49                      54                      59

tta aag cgc ttc agt caa acc ctg cag cgc tcc att agc ttc cgc agt      422
Leu Lys Arg Phe Ser Gln Thr Leu Gln Arg Ser Ile Ser Phe Arg Ser
60                      65                      70                      75

gag agc cgc cct gac atc ctc gcc ccc cga ccc tgg tcc aga aat gcc      470
Glu Ser Arg Pro Asp Ile Leu Ala Pro Arg Pro Trp Ser Arg Asn Ala
76                      81                      86                      91

gcc ccc tcg agc acg aaa cgg aga gat agc aag ctg tgg agt gag acc      518
Ala Pro Ser Ser Thr Lys Arg Arg Asp Ser Lys Leu Trp Ser Glu Thr
92                      97                      102                      107

ttc gat gtg tgc gtc aat cag atg ctt aca tcc aag gaa atc aaa cgt      566
Phe Asp Val Cys Val Asn Gln Met Leu Thr Ser Lys Glu Ile Lys Arg
108                      113                      118                      123

cag gag gcg atc ttt gag ctt tcc caa gga gaa gaa gac ttg ata gaa      614
Gln Glu Ala Ile Phe Glu Leu Ser Gln Gly Glu Glu Asp Leu Ile Glu
124                      129                      134                      139

gac ttg aaa tta gca aaa aag gcc tat cat gac ccc atg ctg aaa ctc      662
Asp Leu Lys Leu Ala Lys Lys Ala Tyr His Asp Pro Met Leu Lys Leu
140                      145                      150                      155

tcc ata atg aca gaa caa gag ttg aat caa att ttt gga aca ctg gac      710
Ser Ile Met Thr Glu Gln Glu Leu Asn Gln Ile Phe Gly Thr Leu Asp

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172	177	182	187	
agg aag cct gat ggc tgc act gaa cat gtt ggt ccc atc ctc gtg ggc				806
Arg Lys Pro Asp Gly Ser Thr Glu His Val Gly Pro Ile Leu Val Gly				
188	193	198	203	
tgg ctc cct tgc ctc agc tcc tat gat agc tac tgc agc aat caa gta				854
Trp Leu Pro Cys Leu Ser Ser Tyr Asp Ser Tyr Cys Ser Asn Gln Val				
204	209	214	219	
gcc gcc aaa gct ctg ctg gac cac aaa aag caa gat cac cga gtc cag				902
Ala Ala Lys Ala Leu Leu Asp His Lys Lys Gln Asp His Arg Val Gln				
220	225	230	235	
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Asp Phe Leu Gln Arg Cys Leu Glu Ser Pro Phe Ser Arg Lys Leu Asp				
236	241	246	251	
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Leu Trp Asn Phe Leu Asp Ile Pro Arg Ser Arg Leu Val Lys Tyr Pro				
252	257	262	267	
ctg ctt ctc cga gaa atc ttg agg cac aca cca aat gat aat cca gat				1046
Leu Leu Leu Arg Glu Ile Leu Arg His Thr Pro Asn Asp Asn Pro Asp				
268	273	278	283	
cag cag cac ttg gaa gaa gct ata aat atc att cag gga att gtg gca				1094
Gln Gln His Leu Glu Glu Ala Ile Asn Ile Ile Gln Gly Ile Val Ala				
284	289	294	299	
gaa atc aac acc aag act ggt gaa tct gaa tgc cgc tat tat aaa gag				1142
Glu Ile Asn Thr Lys Thr Gly Glu Ser Glu Cys Arg Tyr Tyr Lys Glu				
300	305	310	315	
cgg ctt ctt tac ttg gaa gaa ggc cag aaa gac tcc ctg atc gac agc				1190
Arg Leu Leu Tyr Leu Glu Glu Gly Gln Lys Asp Ser Leu Ile Asp Ser				
316	321	326	331	
tct cga gtc ttg tgt tgt cat ggt gaa ctg aag aac aat cgg ggc gtg				1238
Ser Arg Val Leu Cys Cys His Gly Glu Leu Lys Asn Asn Arg Gly Val				
332	337	342	347	
aaa ctg cat gtt ttc ctg ttc caa gaa gtg ctt gtg atc act cga gcc				1286
Lys Leu His Val Phe Leu Phe Gln Glu Val Leu Val Ile Thr Arg Ala				
348	353	358	363	
gtc acc cac aat gag cag ctt tgc tac cag ctg tac cgt cag cca atc				1334
Val Thr His Asn Glu Gln Leu Cys Tyr Gln Leu Tyr Arg Gln Pro Ile				
364	369	374	379	
ccc gtg aaa gac ctc ctg ctg gaa/gac ctc cag gat gga gaa gtg agg				1382
Pro Val Lys Asp Leu Leu Leu Glu Asp Leu Gln Asp Gly Glu Val Arg				
380	385	390	395	





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Lys Arg Lys Gly Ala Gly Val Leu Phe Cys Thr Pro Cys Lys Gln Pro		
4 9 14 19		
ctc tgc cct ccg ccc tct tct ccc acc tgc gaa ggt gcc ccc acc gaa		150
Leu Cys Pro Pro Pro Ser Ser Pro Thr Cys Glu Gly Ala Pro Thr Glu		
20 25 30 35		
gct ggc ggg gac gct gtc cga gcc ggg ggc acc gcc ccc ttg tcc gac		198
Ala Gly Gly Asp Ala Val Arg Ala Gly Gly Thr Ala Pro Leu Ser Asp		
36 41 46 51		
cag cag cag cat gaa tgt ggc gac tcg gac tgt cgg gag tcc ccc gaa		246
Gln Gln Gln His Glu Cys Gly Asp Ser Asp Cys Arg Glu Ser Pro Glu		
52 57 62 67		
aac ccc tgc gac tgt cac agg gag ccg ccc ccc gaa acc cca gac atc		294
Asn Pro Cys Asp Cys His Arg Glu Pro Pro Pro Glu Thr Pro Asp Ile		
68 73 78 83		
aac cag ctg ccg ccg tcc atc ctg ctc aag ata ttt tcc aat ttg tca		342
Asn Gln Leu Pro Pro Ser Ile Leu Leu Lys Ile Phe Ser Asn Leu Ser		
84 89 94 99		
ctg gat gag cgt tgc ctt tcc gca tca ttg gtt tgc aag tac tgg cgt		390
Leu Asp Glu Arg Cys Leu Ser Ala Ser Leu Val Cys Lys Tyr Trp Arg		
100 105 110 115		
gac ctt tgt tta gac ttc cag ttt tgg aag cag ctg gat ctt agt agt		438
Asp Leu Cys Leu Asp Phe Gln Phe Trp Lys Gln Leu Asp Leu Ser Ser		
116 121 126 131		
cgt cag cag gtc act gat gaa ttg ttg gaa aaa att gca tca aga agt		486
Arg Gln Gln Val Thr Asp Glu Leu Leu Glu Lys Ile Ala Ser Arg Ser		
132 137 142 147		
cag aat ata att gaa atc aac att tct gat tgt cgc agt atg tct gat		534
Gln Asn Ile Ile Glu Ile Asn Ile Ser Asp Cys Arg Ser Met Ser Asp		
148 153 158 163		
aat ggc gta tgt gtt tta gca ttt aaa tgt cct gga ctt ctt agg tat		582
Asn Gly Val Cys Val Leu Ala Phe Lys Cys Pro Gly Leu Leu Arg Tyr		
164 169 174 179		
aca gcc tac agg tgt aaa cag ctt tct gac acc tct att att gcg gtt		630
Thr Ala Tyr Arg Cys Lys Gln Leu Ser Asp Thr Ser Ile Ile Ala Val		
180 185 190 195		
gcc tct cac tgt cct tta ctt cag aaa gtg cat gta ggc aac cag gac		678
Ala Ser His Cys Pro Leu Leu Gln Lys Val His Val Gly Asn Gln Asp		

196	201	206	211	
aaa ctc act gat gaa gga ctc aag cag ctg ggc tca aaa tgc aga gaa Lys Leu Thr Asp Glu Gly Leu Lys Gln Leu Gly Ser Lys Cys Arg Glu 212 217 222 227				726
ctc aaa gat att cat ttc ggc cag tgt tac aag atc tca gat gaa ggc Leu Lys Asp Ile His Phe Gly Gln Cys Tyr Lys Ile Ser Asp Glu Gly 228 233 238 243				774
atg atc gtc ata gct aag ggc tgt ctg aaa tta caa agg ata tac atg Met Ile Val Ile Ala Lys Gly Cys Leu Lys Leu Gln Arg Ile Tyr Met 244 249 254 259				822
cag gaa aac aaa tta gtg aca gat cag tca gtg aaa gca ttt gct gaa Gln Glu Asn Lys Leu Val Thr Asp Gln Ser Val Lys Ala Phe Ala Glu 260 265 270 275				870
cac tgt cct gag ctt caa tat gta ggc ttc atg ggt tgt tca gtc act His Cys Pro Glu Leu Gln Tyr Val Gly Phe Met Gly Cys Ser Val Thr 276 281 286 291				918
tct aaa gga gtc att cac cta acc aag cta aga aac ctt tcc agc ttg Ser Lys Gly Val Ile His Leu Thr Lys Leu Arg Asn Leu Ser Ser Leu 292 297 302 307				966
gac cta cgt cat atc act gaa ctg gat aat gaa acc gtg atg gaa att Asp Leu Arg His Ile Thr Glu Leu Asp Asn Glu Thr Val Met Glu Ile 308 313 318 323				1014
gtc aag agg tgc aaa aat ctt agc tct ctc aat ctc tgt ctg aac tgg Val Lys Arg Cys Lys Asn Leu Ser Ser Leu Asn Leu Cys Leu Asn Trp 324 329 334 339				1062
atc ata aat gac agg tgt gtg gag gtc att gca aag gaa gga caa aac Ile Ile Asn Asp Arg Cys Val Glu Val Ile Ala Lys Glu Gly Gln Asn 340 345 350 355				1110
ctg aaa gag cta tat ttg gtg tcc tgt aaa atc aca gat tat gca ctg Leu Lys Glu Leu Tyr Leu Val Ser Cys Lys Ile Thr Asp Tyr Ala Leu 356 361 366 371				1158
ata gcc att ggg cga tac agc atg aca ata gag act gtg gat gtc gga Ile Ala Ile Gly Arg Tyr Ser Met Thr Ile Glu Thr Val Asp Val Gly 372 377 382 387				1206
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agc aag tct ctg aga tat ttg ggg ctg atg aga tgt gat aaa gtc aac Ser Lys Ser Leu Arg Tyr Leu Gly Leu Met Arg Cys Asp Lys Val Asn 404 409 414 419				1302
gaa gtg acg gtg gaa cag ctg gtg cag cag tac ccc cac atc acc ttc Glu Val Thr Val Glu Gln Leu Val Gln Gln Tyr Pro His Ile Thr Phe 420 425 430 435				1350

agc acc gtc ctg cag gac tgc aag agg acc ttg gag aga gcc tat cag 1398  
 Ser Thr Val Leu Gln Asp Cys Lys Arg Thr Leu Glu Arg Ala Tyr Gln  
 436 441 446 451

atg ggc tgg acc ccc aac atg tct gcc gcc tcc tcc tag cgctcctgcc 1447  
 Met Gly Trp Thr Pro Asn Met Ser Ala Ala Ser Ser \*  
 452 457 462

tcgcctagtc cactgggatc attcagcaga gcagaggaga attgtacatt tggggagctg 1507

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ggggtcaggg ccgggggcga atgtggctcg cgttctaggc ctccctgggt tggaaaaaga 180

ctatgttagc aagtgtcacg ccatgctttt gccaaacttt caattaaagg ttgacattcc 240

tgcataagca tttctctgtg aaa atg tcc ttg cct ctt aca gag gag cag 290  
 Met Ser Leu Pro Leu Thr Glu Glu Gln  
 1 5

agg aaa aag att gaa gag aat cga caa aag gct ctg gcc cgc aga gct 338  
 Arg Lys Lys Ile Glu Glu Asn Arg Gln Lys Ala Leu Ala Arg Arg Ala  
 10 15 20 25

gag aag tta ttg gca gaa cag cat cag agg act agc tcg ggc acc tcc 386  
 Glu Lys Leu Leu Ala Glu Gln His Gln Arg Thr Ser Ser Gly Thr Ser  
 26 31 36 41

att gct ggc aac cca ttc cag gcc aag caa ggc cca tcc caa aat ttc 434  
 Ile Ala Gly Asn Pro Phe Gln Ala Lys Gln Gly Pro Ser Gln Asn Phe  
 42 47 52 57

cca agg gag tct tgt aag cca gtg agc cat ggt gtc att ttc aag caa 482  
 Pro Arg Glu Ser Cys Lys Pro Val Ser His Gly Val Ile Phe Lys Gln  
 58 63 68 73

cag aat ctc/agt agc tca tct aat gct gac caa aga cct cat gat tcc 530  
 Gln Asn Leu Ser Ser Ser Ser Asn Ala Asp Gln Arg Pro His Asp Ser  
 74 79 84 89

cac agt ttt cag gca aag gga ata tgg aaa aag cca gaa gaa atg ccc His Ser Phe Gln Ala Lys Gly Ile Trp Lys Lys Pro Glu Glu Met Pro 90 95 100 105	578
aca gcc tgc cca ggc cac agt cca cgt agt caa atg gct ctc act gga Thr Ala Cys Pro Gly His Ser Pro Arg Ser Gln Met Ala Leu Thr Gly 106 111 116 121	626
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ctc ttg agt tat gag tta ggt caa ggt cat gct cag gct tca cct gag Leu Leu Ser Tyr Glu Leu Gly Gln Gly His Ala Gln Ala Ser Pro Glu 138 143 148 153	722
atc agg ttc aca ccc ttt gct aac cca act cat aag cct ctg gcc aaa Ile Arg Phe Thr Pro Phe Ala Asn Pro Thr His Lys Pro Leu Ala Lys 154 159 164 169	770
cca aag agt tcc caa gag aca cca gct cat tcc tct gga cag cct ccc Pro Lys Ser Ser Gln Glu Thr Pro Ala His Ser Ser Gly Gln Pro Pro 170 175 180 185	818
agg gat gct aag tta gag gcc aag aca gca aaa gcc tcc cct tcg ggg Arg Asp Ala Lys Leu Glu Ala Lys Thr Ala Lys Ala Ser Pro Ser Gly 186 191 196 201	866
cag aac att tct tac atc cat tct agc tca gag agt gta acg ccc agg Gln Asn Ile Ser Tyr Ile His Ser Ser Ser Glu Ser Val Thr Pro Arg 202 207 212 217	914
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aat gac tat agt gcc ctg atg aaa gca gcc cag agc ctc ccc acg gtc Asn Asp Tyr Ser Ala Leu Met Lys Ala Ala Gln Ser Leu Pro Thr Val 282 287 292 297	1154
aac ctg cag cct ctg gaa tgg gcc tat ggc agc agc gag tca ccc tcc Asn Leu Gln Pro Leu Glu Trp Ala Tyr Gly Ser Ser Glu Ser Pro Ser 298 303 308 313	1202

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Thr Ser Ser Glu Gly Gln Ala Gly Leu Pro Ser Ala Pro Ser Leu Ser	
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Phe Val Lys Gly Arg Cys Met Leu Ile Ser Arg Ala Tyr Phe Glu Ala	
330 335 340 345	
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Asp Ile Ser Tyr Ser Gln Asp Leu Ile Ala Leu Phe Lys Gln Met Asp	
346 351 356 361	
tcc aga aga tat gat gtc aag acc agg aag tgg agc ttt ctc ttg gaa	1394
Ser Arg Arg Tyr Asp Val Lys Thr Arg Lys Trp Ser Phe Leu Leu Glu	
362 367 372 377	
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Glu His Ser Lys Leu Ile Ala Lys Val Arg Cys Leu Pro Gln Val Gln	
378 383 388 393	
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Leu Asp Pro Leu Pro Thr Thr Leu Thr Leu Ala Phe Ala Ser Gln Leu	
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Lys Lys Thr Ser Leu Ser Leu Thr Pro Asp Val Pro Glu Ala Asp Leu	
410 415 420 425	
tct gaa gtg gac ccc aag ctc gtg tct aat ctg atg ccc ttt cag aga	1586
Ser Glu Val Asp Pro Lys Leu Val Ser Asn Leu Met Pro Phe Gln Arg	
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gct gga gtc aat ttt gcc ata gcc aaa gga ggc cgc ctg ctg ctc gct	1634
Ala Gly Val Asn Phe Ala Ile Ala Lys Gly Gly Arg Leu Leu Leu Ala	
442 447 452 457	
gac gac atg ggc ctg ggg aag acc atc caa gcc atc tgc atc gca gcc	1682
Asp Asp Met Gly Leu Gly Lys Thr Ile Gln Ala Ile Cys Ile Ala Ala	
458 463 468 473	
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Phe Tyr Arg Lys Glu Trp Pro Leu Leu Val Val Val Pro Ser Ser Val	
474 479 484 489	
cgc ttc acc tgg gag cag gcc ttc ctt cgg tgg ctg cca tct ctg agc	1778
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490 495 500 505	
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Pro Asp Cys Ile Asn Val Val Val Thr Gly Lys Asp Arg Leu Thr Ala	
506 511 516 521	
ggc ctg atc aac att gtc agc ttt gac ctt ctt agc aag ttg gaa aaa	1874
Gly Leu Ile Asn Ile Val Ser Phe Asp Leu Leu Ser Lys Leu Glu Lys	
522 527 532 537	
cag cta aaa acc cct ttt aaa gtt gtc atc att gat gaa tct cac ttc	1922

Gln	Leu	Lys	Thr	Pro	Phe	Lys	Val	Val	Ile	Ile	Asp	Glu	Ser	His	Phe	
538					543					548					553	
ctc	aaa	aac	agt	agg	act	gcc	cgc	tgt	cga	gca	gct	atg	ccg	gtc	cta	1970
Leu	Lys	Asn	Ser	Arg	Thr	Ala	Arg	Cys	Arg	Ala	Ala	Met	Pro	Val	Leu	
554					559					564					569	
aag	gtt	gcc	aag	agg	gtg	atc	ctg	ttg	tcg	ggc	aca	cca	gcc	atg	tcc	2018
Lys	Val	Ala	Lys	Arg	Val	Ile	Leu	Leu	Ser	Gly	Thr	Pro	Ala	Met	Ser	
570					575					580					585	
cgg	ccc	gca	gag	ctc	tac	acg	cag	atc	atc	gca	gtc	aag	cca	act	ttc	2066
Arg	Pro	Ala	Glu	Leu	Tyr	Thr	Gln	Ile	Ile	Ala	Val	Lys	Pro	Thr	Phe	
586					591					596					601	
ttc	ccc	cag	ttt	cat	gcc	ttt	gga	ctt	cgc	tac	tgt	gat	gcc	aaa	cgg	2114
Phe	Pro	Gln	Phe	His	Ala	Phe	Gly	Leu	Arg	Tyr	Cys	Asp	Ala	Lys	Arg	
602					607					612					617	
atg	cct	tgg	ggg	tgg	gac	tac	tca	ggt	tcc	tcc	aac	ctg	gga	gag	ctg	2162
Met	Pro	Trp	Gly	Trp	Asp	Tyr	Ser	Gly	Ser	Ser	Asn	Leu	Gly	Glu	Leu	
618					623					628					633	
aag	ctc	ctg	ctg	gag	gaa	gca	gtc	atg	ctg	cgg	cgc	ctc	aag	tcc	gac	2210
Lys	Leu	Leu	Leu	Glu	Glu	Ala	Val	Met	Leu	Arg	Arg	Leu	Lys	Ser	Asp	
634					639					644					649	
gtc	ctt	tcc	cag	ctg	cct	gcc	aag	cag	cgc	aag	ata	gtg	gtg	att	gcc	2258
Val	Leu	Ser	Gln	Leu	Pro	Ala	Lys	Gln	Arg	Lys	Ile	Val	Val	Ile	Ala	
650					655					660					665	
cca	gga	cgg	atc	aat	gcc	agg	acc	aga	gct	gcc	ctg	gat	gct	gca	gcc	2306
Pro	Gly	Arg	Ile	Asn	Ala	Arg	Thr	Arg	Ala	Ala	Leu	Asp	Ala	Ala	Ala	
666					671					676					681	
aag	gaa	atg	acc	acc	aag	gac	aaa	act	aaa	cag	cag	cag	aaa	gat	gcc	2354
Lys	Glu	Met	Thr	Thr	Lys	Asp	Lys	Thr	Lys	Gln	Gln	Gln	Lys	Asp	Ala	
682					687					692					697	
ctc	att	ctc	ttc	ttc	aac	aga	aca	gct	gaa	gct	aaa	atc	cca	tct	gtc	2402
Leu	Ile	Leu	Phe	Phe	Asn	Arg	Thr	Ala	Glu	Ala	Lys	Ile	Pro	Ser	Val	
698					703					708					713	
att	gaa	tat	atc	ttg	gac	cta	ctg	gaa	agt	gga	aga	gag	aag	ttt	tta	2450
Ile	Glu	Tyr	Ile	Leu	Asp	Leu	Leu	Glu	Ser	Gly	Arg	Glu	Lys	Phe	Leu	
714					719					724					729	
gta	ttt	gca	cac	cat	aag	gtg	gtc	ctg	gac	gca	att	acg	caa	gag	ctt	2498
Val	Phe	Ala	His	His	Lys	Val	Val	Leu	Asp	Ala	Ile	Thr	Gln	Glu	Leu	
730					735					740					745	
gag	aga	aag	cac	gtg	cag	cac										

762	767	772	777	
gct gtg gcc gtg ctg tcc atc acc gct gcc aat atg ggc ctc acc ttc				2642
Ala Val Ala Val Leu Ser Ile Thr Ala Ala Asn Met Gly Leu Thr Phe				
778	783	788	793	
tcc tcg gct gac ctg gtg gtg ttt gct gag ctg ttt tgg aac cca ggg				2690
Ser Ser Ala Asp Leu Val Val Phe Ala Glu Leu Phe Trp Asn Pro Gly				
794	799	804	809	
gtg ctg atc cag gct gag gac cgc gtg cac cgc att gga cag acc agc				2738
Val Leu Ile Gln Ala Glu Asp Arg Val His Arg Ile Gly Gln Thr Ser				
810	815	820	825	
tcc gtg ggc att cac tac ctc gtg gca aag ggc aca gct gat gac tac				2786
Ser Val Gly Ile His Tyr Leu Val Ala Lys Gly Thr Ala Asp Asp Tyr				
826	831	836	841	
ctt tgg ccc ctg att caa gag aag att aaa gtt ctg gca gaa gcc ggg				2834
Leu Trp Pro Leu Ile Gln Glu Lys Ile Lys Val Leu Ala Glu Ala Gly				
842	847	852	857	
ctt tct gag acc aat ttt tca gaa atg aca gaa tcc act gat tac ctc				2882
Leu Ser Glu Thr Asn Phe Ser Glu Met Thr Glu Ser Thr Asp Tyr Leu				
858	863	868	873	
tac aag gac cca aag cag cag aag atc tac gac cta ttc cag aag tcc				2930
Tyr Lys Asp Pro Lys Gln Gln Lys Ile Tyr Asp Leu Phe Gln Lys Ser				
874	879	884	889	
ttt gag aaa gaa gga agt gat atg gag ctc ctg gaa gca gca gag tcc				2978
Phe Glu Lys Glu Gly Ser Asp Met Glu Leu Leu Glu Ala Ala Glu Ser				
890	895	900	905	
ttt gac cca gga agt gct tca gga aca tct gga agt agt tcc cag aac				3026
Phe Asp Pro Gly Ser Ala Ser Gly Thr Ser Gly Ser Ser Ser Gln Asn				
906	911	916	921	
atg gga gac acc ctg gat gaa agc tca ttg aca gcc agt cca cag aag				3074
Met Gly Asp Thr Leu Asp Glu Ser Ser Leu Thr Ala Ser Pro Gln Lys				
922	927	932	937	
aaa agg aga ttt gaa ttt ttt gat aac tgg gac agc ttt acg tct ccc				3122
Lys Arg Arg Phe Glu Phe Phe Asp Asn Trp Asp Ser Phe Thr Ser Pro				
938	943	948	953	
ctg taa aaggggcaaa aagaaaaaaa taaaaagcat tttaaatca tggaattgaa				3178
Leu *				
954				
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gcagtaatgg ctcccaggac acctttgaag catgttacag cggcacgtcc acaccttctt      300
tccatggctc ccactgcagc ggcagcgacc acagcagtct gggcttggag cagttacagg      360
attac      atg gtc acg ttg cgg agt aag ctg ggg ccc ctc gag atc cag      407
            Met Val Thr Leu Arg Ser Lys Leu Gly Pro Leu Glu Ile Gln
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Gln Phe Ala Met Leu Leu Arg Glu Tyr Arg Leu Gly Leu Pro Ile Gln
15             20             25             30

gac tat tgc aca ggc ctg ctg aag ctc tac gga gac cgg cgc aag ttc      503
Asp Tyr Cys Thr Gly Leu Leu Lys Leu Tyr Gly Asp Arg Arg Lys Phe
31             36             41             46

ctc ctc ctt ggg atg cgg ccc ttc atc ccg gac cag gac atc ggc tac      551
Leu Leu Leu Gly Met Arg Pro Phe Ile Pro Asp Gln Asp Ile Gly Tyr
47             52             57             62

ttc gag ggc ttc ctg gag ggc gtg ggc atc cgc gag ggc ggc atc ctc      599
Phe Glu Gly Phe Leu Glu Gly Val Gly Ile Arg Glu Gly Gly Ile Leu
63             68             73             78

act gac agc ttc ggc cgc atc aag cgc agc atg agc tcc acg tcg gcc      647
Thr Asp Ser Phe Gly Arg Ile Lys Arg Ser Met Ser Ser Thr Ser Ala
79             84             89             94

tcc gca gtg cgc agc tac gat ggc gcg gcg cag cgg ccc gag gca cag      695
Ser Ala Val Arg Ser Tyr Asp Gly Ala Ala Gln Arg Pro Glu Ala Gln
95             100            105            110

gcc ttc cac cgg ctg ctg gct gac atc acg cac gac atc gag gcg ctg      743
Ala Phe His Arg Leu Leu Ala Asp Ile Thr His Asp Ile Glu Ala Leu
111            116            121            126

gcc ccc gat gac gac gac gac gag gat gag ccc cgg ggt cac agg      791
Ala Pro Asp Asp Asp Asp Asp Asp Glu Asp Glu Pro Arg Gly His Arg
127            132            137            142

ggc ggg acc gac ccc gca gaa gac aac tac ctg tag ccac cgccctgcg      841

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 Met Lys Glu Pro Ala Ala Cys Ser Val Arg Gly Gly Thr Arg Leu  
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ccg gcg gtg ggt cta gct ggg gga ggt cgg gcc atg ctg gtg ggc cag 156  
 Pro Ala Val Gly Leu Ala Gly Gly Gly Arg Ala Met Leu Val Gly Gln  
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 Leu Leu Ser Gly Val Gly Pro Ala His Gly Ser Glu Asp Ile Val Val  
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 Gly Asp Phe Ile Leu Lys Ile Glu Pro Pro Leu Gly Trp Ser Phe Glu  
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 Pro Thr Thr Val Glu Leu His Val Asp Gly Val Ser Asp Ile Cys Thr  
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His Ala Ile Thr Leu Glu Phe Tyr Gln Asp Gly Asn Gly Arg Glu Asn	
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